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SOME ASPECTS OF THE MENOPAUSE*

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THE modern gynæcologist is an individual whose interests have, by force of circumstances and recent knowledge, extended far beyond the realms of the pelvis. He is in many respects less of a surgeon than a physician, and if he is to understand the many problems of disordered function daily presented to him he must spend more time in elucidating the cause and treatment of such matters as menstrual pain, headache, vomiting, and epilepsy than in removing fibroid tumours from the uterus or correcting displacements of the pelvic viscera. The gynæcologist of to-day indeed studies woman in her entirety, and particularly as a complex of hormonic factors and sympathetic nervous activity, and it is on this thesis that my communication to you is based.

The termination of the reproductive phase in a woman's life is a time when general medicine and gynæcology walk almost hand in hand, and for that reason I have thought fit to concentrate particularly upon that interesting period commonly called the menopause. Recent years have witnessed a very great access of knowledge in relation to female sex physiology, and every few months the workers in the physiological laboratories and the clinicians are adding to or revising that knowledge. Some that has been written may indeed have to be unwritten in the future, as there is no finality in medicine, and apparently least of all in gynæcological physiology! Although much has been done, the present is still a time for the recording of facts and observations from which the truth will eventually emerge.

THE MENSTRUAL FUNCTION

To discuss the clinical picture presented by the female climacteric it is necessary to refer very briefly to the physiology of the menstrual function.

The view I hold is that menstruation in the human species is the clinical manifestation of two factors, viz., the *luteal factor* and the *oestrual factor,* which in health normally coincide. About the middle of each menstrual cycle, between the 12th and 17th days, to be precise, a ripe ovum is discharged from the ovary. From the cells in the Graafian follicle from which it has escaped develops the corpus luteum, the prime function of this gland being to produce the hormone which stimulates growth of the connective-tissue cells of the endometrium and convert it into a decidua ready for the ovum, should it be fertilized. This growth is dependant upon constant stimulation by the lutein secretion, for if it is withdrawn the endometrium undergoes molecular necrosis. The crumbling process is associated with rupture of capillaries and hæmorrhage occurs, clinically recognized as the menstrual function. The lutein hormone is generally regarded as being antagonistic to ovulation, and so long as a normal and functioning corpus luteum is present further development of ovarian follicles as a rule is suppressed. That this is not invariably so, however, is shown by the occasional occurrence of superfetation.

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Should fertilization not take place the stimulus to development of the endometrium is withdrawn by lipoid degeneration of the corpus luteum itself, the cause of which at present is not known. Fraenkel showed that it is possible to bring about this state of affairs by excising or destroying the corpus luteum present in the ovary a week or ten days before the date of the menstrual period, an observation which I have frequently confirmed. In 1927, in a communication to the Edinburgh Obstetrical Society, I observed that the same thing happens to a less extent if a developing or mature Graafian follicle is excised or cauterized, or if its secretion is merely aspirated, thus proving that the integrity of the endometrium is dependent upon the hormone in the follicle, whether it is ruptured or converted into the corpus luteum. In other words, the stimulus is there, but it is elaborated and concentrated by conversion of the follicle into the mature gland, which to-day is regarded as possessing two hormones—*folliculin* and *progestin*.

If further evidence is required as to the nutritive value or stimulating qualities of the lutein secretion upon the endometrium, it is provided by the experiments of Traut. Traut found by using a complex medium of tyrode solution, fibrinogen, and sodium linoleate that it is possible to grow endometrium *in vitro*. By adding extract of corpus luteum or embryonic extract to the medium cellular growth is stimulated, as against controls containing other tissue extracts.

So much for the first factor (Factor A), in human menstruation. If this were the only factor and menstruation simply the abortion of a useless decidua, the problem would be comparatively simple. There is however another factor (Factor B), which complicates the situation materially. I refer to the influence of the anterior pituitary-like sex hormone, about which so much has been written during the last few years. Menstruation, such as we know it, is accompanied by general and local hyperæmia. It is characterized by secretion of the uterine glands, both corporeal and cervical. There is evidence of thyroid activity and in some women almost a temporary condition of hyperthyroidism is established. The initiation and maintenance of this phase of menstrual activity I attribute to the action of the essential sex hormone. The function of this hormone is primarily to produce a state of oestrus, a provision of nature to promote fertilization at the next ovulation. Oestrus, common to all animals, but subject to extreme variation regarding time in the sexual cycle in different families and genera of the animal kingdom, coincides I believe in the human species with abortion of the previous useless decidua. In other words Factors A and B absolutely synchronize. This view I know is somewhat at variance with the conception of menstruation in the human species commonly held to-day, which attributes the whole function to the activities of *folliculin* and *progestin*, stimulated by the *Prolan A* and *Prolan B* factors of the anterior hypophysis.

What is the source of the sex hormone in the body? This is a problem which is interesting many of us to-day. By some it is still described as "the active principle of the ovary." The reason for this I suppose is that the earlier investigators first described the oestrus principle as present in the fluid follicular contents of the ovary. Later the centre of interest was transferred to the anterior lobe of the pituitary, which was recognized as controlling ovarian function. It was then discovered that the placenta contained large quantities of the sex hormone and to-day, through the work of Collip, Loeb, Zondek, Ascheim and others, we know that it is present in many body fluids and organs. For these reasons the term "ovarian hormone" appears to be inappropriate. Protests have already been voiced against the use of the word "ovarian" or "pituitary" for fractional extracts made from the placenta or urine, and I am quite sure that we shall hear further objections raised in the future. The fact is, we know that a sex hormone exists in the adult female organism, whether pregnant or not, but we do not know yet where that active principle is elaborated. For the present the adoption of Collip's term, "anterior pituitary-like hormone," appears to be the most suitable.

An interesting observation of Zondek on animals was that by means of thallium it is possible to stop the production of the sex hormone, even when follicles with ripe ova showing mitotic figures are present. The sex hormone, therefore, does not control the growth and activities of the ovum. On the other hand Collip, Corner, Parkes and others have shown that by the injection of follicular fluid or other sex hormone-containing substance, it is possible

in young animals to produce complete oestrus in the absence of any ripe ova. In such animals as the mouse and rat all the ova can be destroyed by means of x-rays, and yet oestrus can be artificially established by the injection of the oestrus hormone. Experiments such as these prove conclusively the absolute independence of ovulation and oestrus. In the human species both functions, whilst independent, are I believe co-ordinated and co-related by nature to promote the highest degree of fertility.

Since both factors coincide it follows that the hæmorrhage of menstruation, whilst normally resulting both from necrosis and hyperæmia of the endometrium, *may be caused by one factor only.* If oestrus is sufficiently intense the hyperæmic endometrium will ooze independently, whether any necrosis is present or not. Similarly, if oestrus is entirely absent, the uterus will still bleed if ovulation takes place as the result of endometrial necrosis. A slight menstrual discharge may therefore represent *oestrus without ovulation,* or *vice versa.* Conversely a heavy or protracted hæmorrhage can be the result of endometrial necrosis with intense hyperæmia from the excessive concentrated action of oestrin.

THE CYCLICAL ACTIVITY OF THE SEXUAL FUNCTION

I next call your attention to the cyclical activity of the sexual function. It is a remarkable fact in nature that physiological activity related to the sex function follows in the majority of organisms, both high and low, a cyclical course. The reason for this and the factors which govern it are unknown.

Placing all theories on one side, it is extremely interesting that the general metabolic processes in the female appear to coincide with the cyclical rhythm of the sex function. This is shown by variation in the bodily temperature, the calcium and iodine content of the blood, the basal metabolism, and the raised ammonia coefficient during the pre-menstrual phase (Bond). One of my students, Dr. K. Roberts, has recently conducted a series of observations on the basal metabolic rate of women in relation to the normal menstrual cycle, the "period" artificially produced by excision of the corpus luteum or Graafian follicle, and the artificial menopause resulting from double oöphorectomy. Roberts has confirmed the work of Wakeman as to a pre-menstrual rise in the metabolic rate, and has shown that a curve can be drawn of the basal metabolic ratio which automatically divides itself into four phases corresponding closely to the various stages of endometrial growth. During the pre-menstrual stage a gradually increasing metabolic rate is obtained, reaching a maximum four to five days before the onset of the menstrual function. Two to three days before the discharge appears there is a sudden fall to a minimum value. The curve then gradually rises until its value is above normal, and this phase is associated with the onset of the menstrual abortion. During menstruation the rate has a higher value than normal, and is constant, varying less than 4 per cent, and establishing what Roberts calls a "menstrual plateau." At the end of menstruation there is a sudden fall to a value 8 per cent below normal. These phases are so well defined and so constant that it is possible to state from a study of the metabolic rate curve the actual phase in which the uterine endometrium will be found.

An observation of peculiar interest in relation to the menopause is that if an artificial menstrual period is initiated by destruction of a mature Graafian follicle or developing corpus luteum a disturbance of the basal metabolic rate is produced which is typical of that described as normal for the natural function. Also at the time in the cycle when menstruation would normally have occurred had no surgical interference taken place a second typical menstrual rise and fall occur, although unaccompanied as a rule by any uterine hæmorrhage. A secondary curve is thus superimposed upon the normal cycle of the individual.

At the menopause ovulation is commonly frequent, irregular and patchy, and this is reflected by marked variations in the metabolic rate. When an artificial menopause is suddenly and acutely instituted by double öphorectomy the subsequent metabolic curve continues for a time to show the usual menstrual disturbance, although the variations are not so obvious because the metabolic rate throughout the cycle is continually high. Roberts' observations are interesting because they show that the metabolic changes are not due to anabolic and katabolic phases in the endometrium or indeed in ovarian function, as *they continue when all ovarian and uterine tissue is absent.* From the practical

point of view they are also of value as proving that the cyclical rhythm is still being maintained at and after the menopause in the absence of any hæmorrhagic uterine discharge which signifies the acme of sexual activity.

The question we now have to consider is whether it is possible to correlate these observations and experimental facts with the clinical data commonly associated with the menopause, natural as well as artificial. When we speak of this epoch in a woman's life we conjure up a vision of flushings, headaches, vertigo, insomnia, and various other vasomotor and nervous disturbances, the whole commonly associated with an increase of reflex irritability and a change in the metabolism usually ending in the deposition of fat in the body tissues. Now this general picture, although common, is by no means universal. Some women experience very few of these symptoms and a fortunate few suffer not at all. The menses cease; there is, perhaps, an occasional slight "flush" or two, which pass almost unrecognized, and that is the end. No other symptoms are observed. Exactly the same individual variation exists when a series of after-histories of the artificial menopause following double oöphorectomy are examined. The question we have to consider is why does this discrepancy exist? Why does one woman escape and another suffer to such a degree that an actual mental breakdown is not an unknown possibility? More than one factor is probably involved, but I suggest that the deciding link in the production of the clinical picture of the menopause is a breakdown in correlation between the two great essentials of the menstrual function, the factors which I have designated as "A" and "B", the "ovulatory" factor and the "oestrual factor

All through sexual life, from puberty to the menopause, one or more ova are reguarly discharged from the ovary, the endometrium grows to a certain state of development, and, unless the ovum is fertilized as regularly necroses, with the escape of blood from the ruptured capillaries. As the menopause approaches, the discharge of ova from the ovary becomes irregular. Some cells fail to mature; others take longer than the usual 14 days. In some cases an ovum only ripens at intervals of months, and in a few instances a belated reproductive cell may not mature and rupture until two or three years have passed after the apparent cessation of the menses. When such an ovum ripens and escapes from its follicle, a corpus luteum develops in the ovary and the endometrium subsequently necroses. I have seen a recent normal corpus luteum in an ovary from a woman aged 67 removed with the uterus on account of uterine hæmorrhage. Some of these post-menopausal hæmorrhages can be explained by delayed or late ovulation. Uterine hæmorrhage due to this cause is an interesting phenomenon. In itself it is quite harmless, but when it occurs it usually necessitates a diagnostic curettage, owing to the possibility of the bleeding being caused by early carcinoma of the uterine body. The type of hæmorrhage gives important diagnostic information, that caused by late ovulation being in duration and character very like an ordinary menstrual period; in fact, patients note this themselves. The hæmorrhage from carcinoma of the corpus uteri is less in amount, bright red and more prolonged. It is a blood-stained discharge rather than a single short solitary bleeding.

Cases are by no means unknown of fertilization of these belated ova taking place. Two examples of post-menopausal pregnancy occurred in my own experience within a short time of each other. In each case pregnancy was quite unsuspected and the enlargement of the abdomen was thought to be caused by a neoplasm. Very remarkable instances of late pregnancy are recorded from time to time. Several gestations at ages over 60 are noted, and one extraordinary case of pregnancy occurring at the age of 72 is described by Pitou.

A temporary increase of fertility commonly takes place at or about the age of cessation of the reproductive function. In some women their only pregnancy has occurred at this time. Such facts are probably to be explained by a process of "speeding up" in maturation of the follicles, or indeed, what might be described as a temporary "mass production" of reproductive cells. I have in my possession an ovary containing two corpora lutea removed from a patient aged 45. The other ovary from this same woman also contained a corpus luteum, proving the simultaneous maturation and rupture of three Graafian follicles.

It is evident, then, that nature has two alternatives regarding the cessation of the function of ovulation. The former, and infinitely the rarer of the two, is for the discharge of ova to

proceed regularly and rhythmically until the last follicle has ruptured. The second, and common event, is for two or more ova to be released at one ovulation, to be followed by a long period of maturation. The subsequent endometrial necrosis corresponding to this irregular type of ovulation is correspondingly "patchy". Clinically, the picture is one of irregular uterine hæmorrhage, and it is not surprising that confusion arises in the diagnosis of carcinoma of the cervix uteri.

I now turn to Factor B., the oestrual factor, in the menstrual economy. I have explained that basal metabolic investigations show the existence of post-menopausal cyclical waves which persist for a time and then gradually subside until the individual assumes a stable index. Experimental endometrial necrosis, or the artificial "period" produced by excision of a mature follicle or corpus luteum, is reflected on the metabolic curve as a *subsidiary wave;* and the point I wish to emphasize is that the *normal* "oestrual" disturbance takes place just the same, and continues for a time *in the absence of fresh ovulation.* This provides the key I think, to the clinical picture of the menopause.

If a series of clinical observations upon the vasomotor symptoms that occur at the menopause are recorded certain interesting points evolve. The first fact to be noted is that in many women, in fact, one might almost say the majority, *a definite rhythm may be detected with regard to the severity of the flushings* of the menopause if the menstrual rhythm had previously been regular. If dates are recorded it is found that the acme of "flushings", and in some cases the only manifestations of this type, are present at *regular monthly dates which correspond to the menstrual period* and to the fall in the basal metabolic rate associated with this epoch. The same applies to other vasomotor symptoms, *e.g.*, headaches and hæmorrhages from various organs. I know a woman who exhibited regularly every lunar month one or more conjunctival hæmorrhages in association with intense general "flushing." Other records show similar regular menopausal bleeding from the nose, rectum, stomach, and, in one instance, from the bladder. As the observations extended it was interesting to note that the hæmorrhages from mucous surfaces gradually and spontaneously ceased.

The next fact to which I draw attention is that when hæmorrhage occurs during the menopause, either from the uterus or any other organ, it always, if severe enough, relieves the subjective symptoms. Flushings, headaches, vertigo, etc., are immediately better. For this reason a woman who has occasional uterine bleeding during her menopause from late ovulation is rarely so troubled with vasomotor symptoms as her sister who ceases absolutely to menstruate at a given age.

On more than one occasion I have noted that phenomena indistinguishable from menopausal flushing occur during the amenorrhœa of pregnancy, especially during the early months. These symptoms, commonly called by patients "fainting turns," occur at dates which correspond to the menstrual function and coincide with a fall in the basal metabolism. They may indeed cause abortion. Occasionally, definite flushing occurs in association with uterine hæmorrhage. Also, examples are sometimes seen of a menopause unaccompanied by any vasomotor symptoms whatsoever. Interesting anomalies to which I shall again refer. It is my opinion that the vasomotor symptoms generally associated with the menopause are intimately related to a temporary excessive concentration of the sex hormone within the tissues. The persistence of the oestrual factor after the cessation of ovulation accounts, in other words, for the flushing, headache, vicarious hæmorrhages, and so forth, which make many a woman's life miserable at this epoch. The rhythm of the vasomotor disturbances, their relief by occasional hæmorrhages, and the occurrence of similar manifestations during the amenorrhœa of pregnancy and that following double oöphorectomy, all point to this explanation. Further experimental evidence is available in the presence of the anterior pituitary-like hormone in the urine during the acme of the symptoms. Additional proof is available in the results of administration of oestrin to patients at the menopause. I know of several instances where a commercial preparation of the oestrus-hormone was given to relieve flushings, etc., and the result was just the reverse of what was expected. Not only were the "heats" and headaches rendered more severe, but they were accompanied by severe epistaxis! *Not until this occurred was relief obtained.* Indeed my belief is that the virtue of many of these hormonic so-called

"cures" for the menopause lies in the oestrual uterine hæmorrhages that they may produce. Their clinical application appears to be rather homoeopathic than otherwise. An explanation of the cause of the vasomotor phenomena associated with the menopause has of course been sought in the withdrawal of the ovarian secretion. This much was stated before we knew as much about the ovarian and sex hormone as we do to-day. Culbertson, in 1916, concluded that the symptoms "represented an instability of arterial tension," and goes on to say that "ovarian deficiency causes a relative over-sufficiency of the pituitary and adrenals, thus causing a vacillating hypertension." Hannan's researches, on the other hand, suggest that the flushings are the result of increased tonus of the sympathetic nervous system brought about by unbalanced action of the supra-renal glands. Hannan found that the intravenous injection of ten minims of a 1-1000 solution of adrenalin chloride always gave rise to an immediate attack of "flushing" in women suffering from these disturbances. Thyroid sensitizes the body cells to the action of adrenalin and, therefore, thyroid should not be given to women at the menopause if Hannan's conclusions are correct. It is certainly true that in some women menopausal symptoms are increased and not diminished by the exhibition of thyroid at this time. Hannan attributes the unbalanced action of the suprarenals to withdrawal of the restraining influence of an ovarian hormone. I agree with him that the menopausal vasomotor manifestations are attributable to increased tonus of the sympathetic nervous system, but it appears unnecessary to call in a hypothesis of constant antagonism between the ovary and the adrenals. A more likely explanation, to my mind, is that either the suprarenals, or possibly the sympathetic system itself, are stimulated by accumulated sex hormone unrelieved by natural menstrual hæmorrhage, or that the suprarenal is actually the source of the sex hormone. The subjects of abnormal sympathetic tonus, as exemplified by those individuals who exhibit neck and upper thoracic flushing under mental stress, are generally those women who suffer most acutely during the menopause. I know one woman of this type who complained bitterly of "heats" spreading upwards over her trunk from the thighs during her one and only pregnancy. The "heats" occurred regularly at the dates which corresponded to her normal periods, and they disappeared as soon as menstruation was regularly established after the confinement. In this particular instance the patient told her doctor that she thought she must be approaching "the change" although her age at the time was only twenty-five! That woman is still quite regular to-day, but her periods are always rather excessive. I may say that I regard them as beneficial and rather in the nature of a safety valve to excess of sex hormone.

It will be obvious from what I have said that I am no great advocate of the administration of so-called "ovarian extract" at the menopause, once it is obvious that ovulation is ceasing or has definitely ceased. Indeed, I am inclined to think that many of the preparations on the market at present, if effective at all, are double-barrelled weapons; the oestrin they contain *may* succeed in producing uterine hæmorrhage, and, if so, the vasomotor symptoms will temporarily be relieved. On the other hand oestrin may act, like adrenaline, as it did in certain of my cases, in actually exaggerating the flushings and heats, or producing vicarious hæmorrhages from other mucous surfaces. I have, therefore, recently adopted the very converse of drug treatment at the menopause, and have reverted to the old mediæval practice of blood-letting in cases where intense flushing, vertigo, and especially headache have called for active treatment. The results have been such as to confirm my opinion as to the cause of the clinical symptoms.

Venesection at the menopause is no new therapeutic measure. It was commonly practised by the old "humoral" pathologists. Hoffman, quoted by Currier, observes that "If venesection is omitted when the menses cease, violent cardialgias will result, accompanied with intense heat and pain about the præcordia, the back and scapulæ, especially in the night-time. Some women, especially those who are wasted by prolonged grief, have been afflicted with pain in the left hypochondrium, accompanied with uneasiness and heat in the præcordia, which afterwards terminates in a violent vomiting of the blood or the morbus niger of Hippocrates." Amongst modern writers, Hufeland, in 1839, and more recently Engelhorn, in 1915, have recommended blood-letting for the relief of distressing vasomotor symptoms at the menopause. Engelhorn never withdraws more than 100 c.c. at once. My own practice is to remove 20 c.c.

daily by means of a syringe for two or three days until the symptoms are relieved. A patient with whom insomnia with suicidal tendencies was a very pronounced symptom responded to simple treatment on these lines with most satisfactory results.

To revert to the apparent exceptions, I have noted that those women who experience flushes in spite of the fact that they are menstruating, have usually severe hæmorrhages. These extreme losses I attribute entirely to excess of circulating sex hormone; the flushes being an index of that excess. The urine contains a large amount of the hormone in such cases. On the other hand, those who gravitate into a state of sexual old age without the accompaniment of vasomotor symptoms are the fortunate few in whom diminished production of sex hormone synchronizes with the termination of ovulation. It will be found that such women are normally very unresponsive to sympathetic stimulation. They are placid in temperament, unaffected by various nervous impulses, and are the exact converse of their less fortunate sisters.

If it is true that the symptom-complex of the menopause is the result of unbalanced excess and action of the sex hormone then it is obvious that rational therapy must be based not upon the administration of more of this substance, but rather upon the exhibition of an antidote. An antidote to oestrin is insulin, and this has actually been employed by Vogt, Cottle and others in the treatment of uterine hæmorrhage of hormonic origin. Vogt records that in fifty patients treated by injections of insulin the results were so constant that if the bleeding is not controlled he does not hesitate to attribute it to uterine rather than ovarian causes. According to Halibrandt, insulin appears to exert a functional antagonism to thyroid, anterior pituitary and suprarenal, and prolonged injections will temporarily suppress ovulation and sterilize rabbits and rats. Owing to its antagonism to oestrin and adrenalin it appeared possible that insulin might prove to be a useful addition to our therapeutic armamentarium at the menopause. I have, therefore, commenced to employ it in a few cases of severe menopausal headaches and flushing, and the results have been such as to justify its continuation in a larger series of observations.

May I in conclusion make a few observations with regard to the artificial menopause which supervenes upon removal of all ovarian tissue? Many, in fact I think I may say most, gynæcological surgeons strenuously advocate conservation of the ovaries whenever hysterectomy, total or sub-total, is performed, on the assumption that the symptoms of the artificial menopause are alleviated or indeed prevented by this practice. On the other hand certain observers in England, notably Thomas Wilson in Birmingham, Archibald Donald in Manchester, and Miles Phillips in Sheffield, have as strenuously resisted acceptance of this doctrine on the basis that it is not supported by clinical fact. Some years ago a detailed investigation was carried out by my predecessor Emeritus Professor Thomas Wilson, of Birmingham, upon the immediate after-results of several hundred hysterectomies. The observations are so interesting in the light of recent work on the physiology of the female sex organs that they are worthy of recording. The investigation showed—

1. That conservation of the ovaries after hysterectomy by no means always relieves the patient of the symptoms of an artificial menopause.

2. That vasomotor symptoms are frequently less marked when the ovaries are removed with the uterus than when ovarian tissue is conserved.

3. That in the case of *young* patients double oöphorectomy and hysterectomy is frequently unaccompanied by any marked menopausal symptoms.

4. That the nearer the time of operation approximates to the natural age of the menopause, the more marked are the vasomotor and nervous manifestations.

The writings of recent workers in the same field are tending to confirm these observations. Thus Novak, quoting Culbertson, states that "the effect of castration on young women is often surprisingly slight," and endorses this statement as the result of his own experience. Culbertson remarks that "not one of a considerable series of young women in whom both ovaries have been removed suffered sufficiently to induce her to continue treatment." William Graves also believed "that the so-called menopausal vasomotor symptoms are observed with practically the same frequency after removal of the uterus, either with or without removal of the ovaries, as after total ablation of ovarian tissue alone," and attributed the cause of the

symptoms not to withdrawal of the ovarian hormone but to a "break in the utero-ovarian functional harmony." He went so far as to say that when hysterectomy is necessary retention of ovarian tissue may be actually harmful. This was and is the view of my teacher Thomas Wilson, and independent observations of my own are proving the correctness of his teaching.

With the modern application of radium in the treatment of functional uterine hæmorrhage, additional information has become available regarding the factors concerned in the symptomatology of the artificial menopause. By suitable dosage in young women it is possible to suppress the menstrual function for variable periods extending up to two or three years. One can, in fact, produce a temporary artificial menopause, and the after histories of these cases are valuable in throwing light on this problem. I will quote the clinical details of one such case which is particularly interesting in view of the remarks I have made regarding the cause of the menopausal symptoms.

A patient, aged 27, was treated for severe dysmenorrhœa in April, 1927, by the introduction of 50 mg. of radium bromide into her uterus, with a view to causing a temporary cessation of the menstrual function. Amenorrhœa for two years was produced, and at the times which corresponded to the menstrual function severe headache and sometimes vomiting occurred. These symptoms were relieved by the withdrawal of 20 c.c. of blood from a basilic vein. At the end of two years a menstrual period took place. Three months amenorrhœa followed, when the headaches reappeared. After a little more irregularity the menses were re-established regularly, and all the vasomotor symptoms disappeared. A striking feature of the case was the deposition of subcutaneous fat which followed suppression of the menstrual function. This has persisted in spite of resumption of the normal menses, and the girl now weighs 11 stone. She is now also very lazy, a striking contrast to the nervous energy she displayed before the temporary artificial menopause was produced.

This case provides evidence of the co-ordination between ovarian and uterine function, and of the value of blood depletion in preventing and relieving vasomotor symptoms at the menopause. The effect of radium therapy was to produce temporarily the same clinical picture brought about by hysterectomy and double oöphorectomy. Nevertheless, the menopausal symptoms disappeared at once as soon as the menstrual function was re-established, with the exception of the obesity, which has persisted in spite of the resumption of ovulation. It appears therefore from clinical observation and physiological experiment that the vasomotor symptoms of the menopause can be explained on the assumption of unbalanced action of the sex hormone. Blair Bell once modified Van Helmont's dictum by observing that *"propter secretiones internas totas mulier est quod est."* I am rather inclined to think that one day we may say *"propter oestrin mulier est quod est!"*

One word in conclusion. I would never willingly tell a patient that I had removed both her ovaries with her uterus. However much they are justified in their opinion women think a great deal of these organs. They indeed value them at a great price, and from the psychological point of view I am inclined to think that scientific falsehood on occasion is quite justifiable! I would even go further and say that it is quite within the bounds of probability that in preserving ovaries we may possibly be allowing passive acquiescence to a false psychology to override clinical and scientific truth.

PHENOLPHTHALEIN INTOXICATION.—Ben A. Newman observed 19 with phenolphthalein eruptions in his clinic during the past year. The characteristic eruption is easy for the dermatologist to recognize immediately on inspection. As far as is known, only three other substances, antipyrine, arsphenamine (neoarsphenamine) or amidopyrine, are capable of provoking identical eruptions. In reviewing the literature, the author assembled 17 types of atypical phenolphthalein eruptions and 3 types of visceral involvement. To these he adds 1 of each type and calls attention to the fact that phenolphthalein is not innocuous. In the present state of knowledge, the lesions of this eruption appear to be histologically indistinguishable from those of erythema multiforme. The clinical manifestations, both typical and atypical, including the noncutaneous morbidities associated with phenolphthalein intoxication, may all readily be ascribed to a primary vascular insult. In considering the pathogenesis of fixed eruptions, in which group phenolphthalein intoxication belongs, reasoning must conform with the concepts associated by definition, with the term "fixed eruption." The tendency to recur or persist at a site previously that of an initial lesion, together with its exudative character, favours the belief that a capillary toxicosis is the key to the pathogenesis. Phenolphthalein is contained in more than 125 proprietary preparations, put up in the form of laxative drugs, chewing gums, confections, fruits and biscuits. It is also used for pink icing on cakes, for colouring of candies, and in pink mouth washes and dentifrices. Hence, when exudative lesions of obscure origin are present, phenolphthalein as an etiological agent should be considered in differential diagnosis.—*J. Am. M. Ass.*, 1933, **101:** 761.

IMMUNITY AND SUSCEPTIBILITY AFTER DIPHTHERIA*

BY DAVID L. KLEIN, H. B. CUSHING, ALTON GOLDBLOOM AND E. V. MURPHY

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IT is generally believed that after a patient has recovered from diphtheria, a sufficient quantity of specific antitoxin is found in his blood, produced by the body tissues, to protect him against a recurrence of the illness. Investigations, however, have revealed that this is not always so, and that an adequate antitoxic immunity need not always follow an attack of this disease. John and Kassowitz[1] concluded from their work that there was a likelihood of immunity developing after milder attacks of diphtheria, but not after the severe type when a recurrence of the infection was a distinct possibility. Park[2] states that after a mild attack of diphtheria, antitoxic immunity is rapidly established, but after the severe form of the disease it is never developed in about 50 per cent of the cases. O'Brien *et al.*,[3] in a paper read before the Royal Society of Medicine, quote a work which shows that of 19 children who had had diphtheria only 16 were Schick-negative. Ker and McGarrity[4] performed the Schick test on 157 persons who gave a history of having had diphtheria at some time previously; of these 46.4 per cent were Schick-positive. The authors concluded that they were still susceptible to diphtheria on that account.

The post-infection state of diphtheria presents an interesting field for study. Whereas an attack of diphtheria does confer immunity in most cases, it does not in others, and the significance of a post-infection state of susceptibility has more than an academic interest, since recurrences of diphtheria have been noted in the same individual by other observers[1,5] besides ourselves. The interval between attacks varies. We have seen it as short as 25 days and even prolonged to 11 years. For these reasons we became interested in the serological aspect of the post-infection state.

A group of 10 children was selected from patients who were discharged from the Alexandra Hospital, in whom the diagnosis of diphtheria had been definitely established, and, as treatment, the specific antitoxic serum had been administered in therapeutic doses. After a period of time (as indicated in the Table) had elapsed, and when we felt that the passive immunity administered as a curative measure had been eliminated from the bodies of these patients,[2] we proceeded by examining their blood sera quantitatively for the presence of diphtheria antitoxin. The results obtained are found in the accompanying Table. At the first post-infection examination of the 10 patients, 7 were found immune. Six showed more antitoxin in their blood than the amount represented by the accepted immunity level (1/30 unit of diphtheria antitoxin per c.c. of serum). In one of them only the Schick test was performed, and that was negative. The remaining 3 were at the same time found in the condition of apparent susceptibility. One child (M.B.) showed antitoxin close in amount to that of the immunity level $<1/30$ $>1/60$ unit of antitoxin per c.c. serum She might be considered as possibly immune, being so close to the immunity level, but she is included among the susceptibles for the purpose of showing antitoxin production following the stimulus of a single injection of diphtheria toxoid, as will be noted later. Another was positive to the Schick test and had a blood titre of $<1/250$ of a unit per c.c. serum. The third had $<1/100$ unit per c.c. of serum.

Of course, from so small a series it is unwise to generalize, and particularly when the time factor is not constant, but apparently it does seem that usually the amount of antitoxin produced by the disease itself is in inverse proportion to the severity of the attack. (One moderate case of diphtheria showed a titre of $<1/100$ unit.) A survey of the Table in light of the above statement will reveal that one mild case (H.E.) showed a titre of more than two units. One moderate case (B.Mc.) had the same quantity, whilst three moderately severe cases revealed only $>1/10$ $<1/2$ unit of antitoxin per c.c. serum. The two severe cases showed an antitoxin content of the blood lower than that of the immunity level. Incidentally, it is of interest to note that the development of an active immunity was not prevented by the administration of the curative dose of specific serum in 7 of the

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POST-DIPHTHERITIC IMMUNITY AND SUSCEPTIBILITY

Case	*Age in yrs.*	*Onset*	*Type*	*Post Schick*	*Post Examination U.A.S.*	*(1st) Date*	*Treatment–Date Antigen*	*2nd Examination Date U.A.S.*
B.Mc.	7	Jan. 1932.	M.		>2	Sept. 1932.		
R.K.	1½	April, 1932.	M.S.		>1/10<½	Nov. 1932.		
D.D.	7	May, 1932.	M.S.		>1/10<½	Nov. 1932.		
B.H.	12	April, 1932.	M.S.		>1/10<½	Nov. 1932.		
H.E.	8½	Feb. 1932.	Mi.		>2	Sept. 1932.		
B.Y.	4	March, 1932.	M.S.		>1/30	Dec. 1932.		
B.B.	9	July, 1928.	M.	—		Jan. 1932.		
M.B.	6	Feb. 18th, 1932.	S.		<1/30 >1/60	Sept. 24th, 1932.	0.1.c.c. Concentrated diphtheria toxoid intradermally. Sept. 24/32.	Oct. 11/32. >2
D.G.W.	11	June 7, 1928.	S.	+	$<\frac{1}{250}$	Dec. 10th 1932.	0.5.c.c. Ordinary dip. toxoid. Dec. 16/32.	Jan. 7/32. >1/15
G.R.	2	Mar. 26/1932.	M.		$<\frac{1}{100}$	Nov. 4th, 1932.	0.1.c.c. Concentrated diphtheria toxoid intradermally. Nov. 4/32.	Dec. 7/32. $<\frac{1}{150}$

M.—Moderate diphtheria.
M.S.—Moderately severe diphtheria.
S.—Severe diphtheria.
Mi.—Mild diphtheria.
U.A.S.—Units of diphtheria antitoxin per c.c. serum.

group. Moreover, it is not likely that this procedure was the factor that hindered the development of the desired antitoxic immunity in the remaining 3 cases.

Our main interest centres on the 3 children found susceptible at the first post-infection examination, and who showed on blood examination an antitoxic titre below that of the immunity level. Can it be said of them that they will undoubtedly contract diphtheria if re-exposed to the infection? We are of the opinion, as we hope to show, that some of these found susceptible at the first post-infection examination are actually in a state of active immunity, even though they lack the adequate supply of antitoxin in the blood; in other words they have potential immunity. The attack of diphtheria has acted as an antigenic stimulus. As such, it may or may not provoke the appearance in the blood of a significant quantity of antitoxin. However, a paucity of antitoxins after diphtheria ought not to be taken as *prima facie* evidence of susceptibility unless the reaction of the patient to an antigenic stimulus were known. Cellular immunity[5,6] here plays an important rôle. Whenever there is a scarcity of antitoxin in the blood, the individual, theoretically at least, may be considered in the state of active immunity if he can produce antitoxin rapidly enough and in sufficient quantities to overcome the effects of an exposure to virulent forms of the specific micro-organism. This point of view is based on the work of Glenny and Allen[7] on active immunity in rabbits and guinea pigs treated with toxin-antitoxin mixtures. According to them, the animal which receives an antigenic stimulus (primary stimulus) may not reveal significant quantities of circulating antitoxin. Nevertheless, it can be considered as being actively immune, if after a subsequent dose of toxin-antitoxin (secondary stimulus) it reveals a rapid production of an adequate amount of circulating antitoxin. In other words, the animal may be considered as being actively immune after the primary stimulus, even before circulating antitoxin is detectable. We therefore decided to treat the 3 patients found at the first post-infection examination to be in a state of susceptibility in a manner similar to the procedure

used by Glenny and Allen in their animal experiments. We administered to each of them a small dose of diphtheria toxoid (0.5.c.c. of the ordinary commercial product or its equivalent, 0.1 c.c. concentrated diphtheria toxoid)[8]. After an interval of time, as noted in the Table, unfortunately prolonged through the lack of cooperation on the part of the parents, we retested the blood for any change in the antitoxic content that may have taken place. The following are the details of each case.

CASE 1

M.B., aged 6 years, on February 18th, 1932, the fifth day of the disease, was admitted to the Alexandra Hospital suffering from a severe form of diphtheria with extensive membrane over the tonsils and uvula. She had a brassy cough and expectorated membranous casts of the trachea and bronchi. Recovery took place after the administration of 20,000 units of diphtheria antitoxin. September 24th 1932, (7 months later) the antitoxic content of the blood serum was $<1/30$ $>1/60$ per c.c., *i.e.*, just below the immunity level (1/30 unit per c.c.). She received 0.1. c.c. diphtheria toxoid concentrated intradermally. October 11th 1932, (seventeen days later), the antitoxic content of the blood was >2 units per c.c., *i.e.*, the patient was now beyond any doubt immune to diphtheria.

CASE 2

D.G.W., aged 11 years, on June 7th, 1928, the third day of disease, was admitted with a severe form of diphtheria. Membrane on both tonsils, foul breath, blood-stained, purulent nasal discharge, bull-neck. He recovered after 10,000 units of antitoxin intravenously and 25,000 units intramuscularly. (December 10/32 Schick test positive and blood antitoxin $<\frac{1}{250}$ unit per c.c. serum, *i.e.*, susceptibility, as accepted.) On December 16th, 1932, the ordinary commercial diphtheria toxoid was injected, 0.2. c.c. intradermally and 0.3. c.c. subcutaneously. On January 7th, 1933, (22 days later) blood serum examination revealed $>1/15$ unit per c.c. serum, *i.e.*, immunity, as accepted.

The two children M.B. and D.G.W. presented a low titre at the first post-infection examination. Nevertheless, we consider them to have been at that time in a state of active immunity since they showed a good immunity reaction to a small dose of toxoid. It is reasonable to suppose that a similar antitoxin production would have taken place in the presence of an invasion of diphtheria bacilli and the patient would thus have escaped a recurrence of the disease. In brief, these two children were really in a condition of pseudo-post-infection susceptibility, or in a state of potential immunity when originally tested after the disease.

CASE 3

G.R., aged 2 years, on March 26th, 1932, the 4th day of the disease, was admitted to the Alexandra Hospital with moderate diphtheria. There was a membrane on both tonsils, just beginning to appear on the adjacent part of the soft palate. She recovered after the administration of 10,000 units of antitoxin intramuscularly. On November 4th, 1932, (7½ months later) the blood examination revealed $<\frac{1}{100}$ unit diphtheria antitoxin per c.c., *i.e.*, accepted susceptibility. She received 0.1. c.c. of concentrated diphtheria toxoid intradermally. On December 7th, 1932, (33 days later) the blood serum examination showed that there was still $<1/150$ unit per c.c., *i.e.*, she was still in the condition of susceptibility.

It is likely, owing to the fact that G.R. presented a poor antitoxin production as the result of the toxoid injection, that an infection with living cultures of the Klebs-Loeffler bacillus would have resulted in a similar poor immunity reaction and possibly a recurrence. In other words, G.R. is a true post-infection susceptible.

SUMMARY AND CONCLUSIONS

Apparently, antitoxic immunity usually appears in the child after diphtheria in inverse proportion to the severity of the attack; however, a low antitoxin titre in the blood after this disease should not be taken as sufficient evidence of true susceptibility. In the event of a low titre after the illness the individual may be considered as immune to diphtheria if his tissues, as a result of a small antigenic stimulus, are able to rapidly produce an adequate supply of specific antitoxin. Thus, post-infection susceptibility may be real or apparent. The curative dose of antitoxin administered during the illness probably does not hinder the development of active immunity.

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POISONING FROM DRINKING RADIUM WATER.—Alexander O. Gettler and Charles Norris present the first case on record of fatal poisoning from the consumption of water containing traces of radium salts in which the presence of radium in the bones and tissues was definitely proved by scientific laboratory procedures. Death was due to pathological lesions brought about by the radium which entered the system, by drinking water for a few years, which was said to contain 2 micrograms of radium in every 2 ounces (60 c.c.) of water. The presence of the radium was proved by both the electroscopic and the photographic method. The quantity of radium in the bones and soft tissues was determined by the emanation method. The entire skeleton contained 73.27 micrograms of radium, the soft tissues only 0.39 micrograms. The total amount of radium, therefore, in the entire body was 73.66 micrograms. Radium salts (or radioactive substances in general), when introduced into the blood stream, become detrimental to health and fatal to life, and therefore the use of foods or beverages containing radium salts should be prohibited.—*J. Am. M. Ass.*, 1933, **100**: 400.

EVIPAN: A PRELIMINARY REPORT ON A NEW INTRAVENOUS ANÆSTHETIC

BY GAVIN MILLER, M.D.,

Montreal

EVIPAN is the proprietary name of a new intravenous anæsthetic introduced during the past year by Bayer Products Ltd., Germany. This anæsthetic is the sodium salt of N-Methyl-C.-C.-cyclohexenyl-methyl-barbituric acid. It has been used in Germany in over 25,000 cases[6] with only one death attributed to the anæsthetic. It is therefore evident that this drug has passed the purely experimental stage and its use is within the realm of practical therapeutics.

The pharmacology of Evipan has been carefully worked out and published in numerous German papers.[1, 2, 3, 4] During the summer of 1933 I saw this drug used in the clinic of Dr. Lawrence Abel, of the Princess Beatrice Hospital, London, England, in a large variety of surgical cases which included operations on practically every region of the body. He has used this anæsthetic over 400 times. He stated to me that he considered Evipan, in selected cases, an important addition to the anæsthetics at the command of modern surgery. I have personally observed this anæsthetic used in the following types of cases: tonsillectomy, herniotomy, excision of an adenoma of the thyroid, cystoscopy, the crushing of bladder stones, appendectomy, incision of abscesses, etc. I was impressed by the simplicity of the technique of administration, the rapidity of its action, the depth of narcosis (it appeared to be merely a normal deep sleep), the lack of change of blood pressure, pulse, respiration, and colour, and the absence of the usual post-anæsthetic effects.

Winthrop & Co. having supplied me with thirty ampoules of this drug, I have used it in the past month in 22 patients covering rather a wide range of both major and minor surgery.

The 22 cases were made up of thoracoplasties 4, extrapleural wax-filling 1, open cautery pneumolysis 1, crushing and avulsion of phrenic nerve 5, intratracheal lipiodol injection 1, bronchoscopy 1, tonsillectomy 1, extraction of teeth 3, proctoscopic examination 1, sequestrectomy 1, multiple incisions for cellulitis of arm 1, partial mastectomy 1, hæmorrhoidectomy 1. Of these 22 cases Dr. Norman Bethune has performed 14 operations, four operations were performed in the Royal Victoria Hospital and one in the Women's General Hospital. Dr. Georges Cousineau, Assistant Anæsthetist of the Sacré Cœur Hospital, assisted me in Dr. Bethune's cases.

Technique.—The drug is supplied in ampoules containing 1 grm., together with separate ampoules containing 10 c.c. of sterile distilled water. The white crystalline powder is readily soluble in this 10 c.c. of water. It is injected into the median basilic vein of the forearm with a short 18-gauge needle. It is important that the patient be draped, the area of operation prepared, and the surgeon ready to start, before the anæsthetic is commenced, as the skin incision can be made within 30 seconds after the injection.

Preliminary medication.—While the Bayer Products Ltd. do not recommend any preliminary medication, we have used both morphine and nembutal, either singly or in combination, in half our cases. In our experience and the experience of Abel, these preliminary injections both deepen and prolong the anæsthesia. In one of our cases of thoracoplasty the patient, who had received only ¼ gr. of morphine, required 0.5 c.c. of Pantopon for pain on awakening 35 minutes after the induction of anæsthesia by Evipan.

Dosage.—The following is the dosage advised by the manufacturers:—

Weight in kilos.	*Weight in lbs.*	*Dose (10 per cent solution)*
50	110	7.0 - 7.5 c.c.
50 - 55	110 - 120	7.5 - 8 c.c.
55 - 60	120 - 135	8 - 8.5 c.c.
60 - 65	135 - 145	8.5 - 9.0 c.c.
65 - 70	145 - 155	9.0 - 9.5 c.c.
70 - 75	155 - 165	9.5 - 10.0 c.c.
75 up	165	10.0 c.c.

Abel recommends using 2.0 to 3.0 c.c. in infants and small children.

TABLE

EVIPAN INTRAVENOUS ANÆSTHETIC IN TWENTY-TWO OPERATIONS

Case	Disease	Operation	Operator	Hospital	Amt. of Anæs.	Duration of Oper.	Duration of Anæs.	Comments
					c.c.	mins.	mins.	
1.	Bilat. pulmonary tuberculosis	Crushing phrenic nerve	Dr. N. Bethune	Sacré Cœur	10	2	20	B.P. fell from 130 to 110; anæsthesia adequate; patient 8½ months pregnant.
2.	Unilateral pulmonary tuberculosis	Avulsion right phrenic nerve	Dr. N. Bethune	Sacré Cœur	8	6	18	Morph. gr. ¼ Scopalamine 1/150, hypo. before operation; anæsthesia perfect.
3.	Ulcerative colitis	Proctoscopic examination	Dr. G. Miller	Women's General	8	10	45	No noticeable change in B.P., pulse, or respiration; perfect anæsthesia.
4.	Bilat. pulmonary tuberculosis	Extra pleural plombage	Dr. N. Bethune	Sacré Cœur	10	16	30	No fall of B.P.; pulse slower at end of operation; "a perfect anæsthetic".
5.	Hæmorrhoids	Hæmorrhoidectomy	Dr. G. Miller	R.V.H.	8	15	30	Perfect anæsthesia.
6.	Bilat. pulmonary tuberculosis	Crushing rgiht phrenic nerve	Dr. N. Bethune	Sacré Cœur	4	2	20	Preliminary medication-morphine, gr. ¼; nembutal, 1½ gr. Perfect anæsthesia.
7.	Osteomyelitis of Mandible	Sequestrectomy	Dr. F. A. C. Scrimger	R.V.H.	10	15	25	Perfect anæsthesia.
8.	Bronchiectasis (Age 14)	Intratracheal injection of lipiodol	Dr. N. Bethune	Sacré Cœur	8	5	30	Patient slept for 3 hrs. Nembutal gr. ½ before; good anæsthesia.
9.	Bilat.ipulmonary tuberculosis	Crushing left phrenic nerve	Dr. N. Bethune	Sacré Cœur	6	45 sec.	25	Preliminary medication–nembutal, 1½ gr., morphine, gr. ¼; good anæsthesia.
10.	Bilat. pulmonary tuberculosis	Third stage thoracoplasty (4 ribs)	Dr. N. Bethune	Sacré Cœur	10	7 mins.	29	Restless on awakening; went to sleep after 0.5 c.c. pantopon; perfect anæsthesia.
11.	Pulmonary tuberculosis	Phrenicectomy	Dr. Georges Deshaies	Sacré Cœur	6	3.5	13	Preliminary medication, 1½ gr. nembutal.
12.	Cellulitis of forearm	Multiple incisions	Dr. F. A. C. Scrimger	R.V.H.	10	10	30	Satisfactory anæsthesia.
13.	Tonsillitis	Tonsillectomy and adenoidectomy	Dr. Bray	Sacré Cœur	3	6	30	Patient very excited for several hours and had tetanic convulsions (see note in text).
14.	Dental caries	Extraction of two teeth	Dr. Baillargeon	Sacré Cœur	2	2	5	Wide awake without; symptoms in 5 mins. walked to ward.
15.	Dental caries	No operation	Dr. Baillargeon	Sacré Cœur	2 repeated in 5 mins.	No anæsthesia obtained		Weight 185 lbs.; dose insufficient.
16.	Pulmonary tuberculosis	Upper stage thor. (3 ribs)	Dr. N. Bethune	Sacré Cœur	7.5	18	35	No change in pulse throughout operation.
17.	Bilat. pulmonary tuberculosis	Cautery open pneumolysis	Dr. N. Bethune	Sacré Cœur	8	31	25	(No preliminary medication.) Gas and oxygen required for last 5 mins. Induction without difficulty.
18.	Bilat. bronchiectasis	Bronchoscopy	Dr. N. Bethune	Sacré Cœur	7	5	25	No preliminary medication—anæs. of deeper and longer duration than required.
19.	Bilat. pulmonary tuberculosis	Antero-lateral thoracoplasty with aspiration of empyema	Dr. N. Bethune	Sacré Cœur	7.5	23	40	Preoperative medication, nembutal, 1.5 grs., an additional 1½ c.c. of evipan after 20 mins.; perfect anæsthesia.
20.	Pulmonary tuberculosis	Antero-lateral thoracoplasty	Dr. N. Bethune	Sacré Cœur	7.5	8	20	Preoperative medication, nembutal, gr. 1½; morphine, gr. ¼; vomited once on awakening—anæsthesia perfect.
21.	Dental caries	Extraction of five teeth	Dr. Baillargeon	Sacré Cœur	3	1½	3	Patient able to walk in 5 mins. "a remarkable and perfect anæs."—Dr. Baillargeon.
22.	Abscess of breast	Partial mastectomy	Dr. Schaffner	R.V.H.	8	30	20	No preliminary medication. Required gas and O_2 for last 10 mins.

COMMENTS

Evipan appears to be, in our limited experience, a valuable anæsthetic in properly chosen cases. Undoubtedly with further experience the proper dosage and the amount of preliminary medication, if and when necessary, will be determined with a higher degree of accuracy than we are at present able to state.

Within 30 seconds after slow injection the patient falls into what appears to be a deep sleep. The operation can be commenced immediately. There may be slight movement on making the skin incision, but this movement is not aggravated as one proceeds. The colour of the skin and mucous membranes does not change. Dr. Bethune commented on the bright redness of the blood in the wounds as compared with the dark red colour of the blood in cases having gas and oxygen anæsthesia. The blood pressure rose 10 points in 2 cases, remained stationary in 4, and fell from 5 to 20 points in the remaining cases. The pulse fell 10 to 20 points in 6 cases, remained stationary in the 6 others, and rose from 10 to 40 in the remainder. The respiratory rate remained practically unchanged.

Awakening in all cases but four was gentle and gradual and unattended by symptoms of excitement. One patient vomited once, which may have been due to the preliminary morphine. One patient, a case of phrenic nerve avulsion, who had received nembutal and morphia before the operation, complained of temporary dimness of vision for two days. Examination of the fundi was negative. This complaint could not be substantiated by objective findings. The examination of the urine was negative and the symptom disappeared completely. The cause was not discovered. Two patients showed emotional excitability after consciousness returned. This lasted for fifteen to thirty minutes, and was relieved by Pantapon. One patient, a child of 8, weighing 45 lbs., after tonsillectomy, who had received 3.5 c.c. solution, exhibited tetanic convulsions and tachycardia for three hours. The anæsthesia was perfect. These phenomena occurred on awakening.

On questioning patients, especially those who had previously received gas and oxygen for former operations, the unanimous opinion was that this anæsthesia was, from their point of view, the best that they had ever received. The thoracoplasty patients, who had already been subjected to two and in one case three previous operations under gas and oxygen, were the most enthusiastic. In my opinion, if further investigation confirms my present experience, this drug may become as valuable to the surgeon as ether or novocaine for suitably chosen operations.

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SOME NEWER TESTS OF RENAL FUNCTION*

BY HEBER C. JAMIESON, M.B.,

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NO organ in the human body can compare with the kidney in the number and variety of tests devised to aid the physician in the study of its functions in health and disease. The illustrious names preserved in the nomenclature of its minute anatomy, Malpighi, Bellini, Henle, Bowman; recalled in the consideration of its physiological activity, Ludwig, Heidenhain, Cushny; or made use of in describing its pathological changes, Bright, Virchow, Wilks, Johnson, Fahr; attest to the importance in which the kidney has been held since the beginning of scientific medicine.

Bright separated the group of diseases associated with his name from all others by pointing out the association in them of three things—dropsy, a heat-coagulable protein in the urine, and gross pathological changes in the kidney. For some decades physicians and pathologists disputed over whether the various forms of this disease were separate entities or varying degrees of the same morbid process.

No sooner was the condition recognized as due to anatomical alterations in the kidney than

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efforts were made to estimate the amount of tissue damage. Tests of renal function were introduced, tests of excretion and tests of retention. Since the days of Bright over seventy such tests have been suggested and every year sees several new ones. Chemicals, such as potassium iodide, and dyes were experimented with. These tests of excretion multiplied with the years. In 1902 Strauss discovered that increased urea in the blood was a concomitant of nephritis and then began the tests of retention. Widal and Javal noted salt retention in the œdema of Bright's disease in 1903 and advised a low salt diet.

In 1914 Volhard and Fahr introduced a system of investigation by linking symptoms and cure with pathological findings. Then came the period of biochemical research and microchemical methods of blood examination. Tests of excretion were for the moment forgotten and tests of retention took their place. The criterion of kidney function was then whether or not the blood was cleared of waste products in a specified time. Non-protein nitrogen, uric acid and creatinine estimations were believed to tell exact degrees of kidney damage. The information thus gained advanced the knowledge of this subject, but failed to show early impairment.

Hope, which springs eternal, was revived by the phenolsulphonephthalein test which was introduced in 1910. This became increasingly popular and was heralded as the one and only procedure required for an accurate estimation of kidney function. Since then, test after test has come and gone, method after method or combination of methods has been advocated, and yet the "open sesame" to the diagnosis and estimation of the degree of renal inadequacy has not been forthcoming. Many of these tests were too variable in their results; many required skilled technical laboratory aid; some were time-consuming. No simple method was available.

So important has been the study of this excretory organ in the last quarter of a century that physicians and surgeons alike have welcomed the advent of the urological specialist. And now, even he finds little or no time for the renal diseases which do not require for their elucidation some new instrument, some brilliant dye or other spectacular aid. The internist and the general practitioner are left with those so-called "silent diseases," those affections which Bright and the noted group of workers at Guy's Hospital in the "eighteen-thirties" worked so hard to identify and classify. Within the last ten years the work of the histologists has given a better conception of minute kidney structure, and the physiologists have shown how the component parts of the kidney function, and from their work has been formulated more simple tests of renal activity than had been heretofore available.

What has been the result of these methods of investigation? In diagnosis the improvement has been marked and is steadily increasing. In the Canadian Registration area over the period of 1921-28 the death rate from nephritis rose from 32 per 100,000 to 49 per 100,000. This is believed to be due to more careful diagnosis rather than to increased mortality rate, since deaths from senility and ill-defined diseases have decreased proportionately. So far, so good. The easier part of the nephritic problem is being solved. Still, some of the more difficult questions in diagnosis and those of prognosis and management present greater perplexities.

The differential diagnosis between pyelitis and acute nephritis represents one phase of the question. The insidious transition from acute to chronic Bright's disease which may often be avoided by careful management, the estimation of kidney damage in pregnancy, or the significance of albumin or casts in the urine, all call for the most painstaking and accurate examination. The difficulties of interpretation and the technical skill required for many of the tests too often baffle the skill of the busy practitioner and lead to a general disregard for careful treatment.

Of the multitude of tests few can be carried out satisfactorily without a certain degree of technical skill. Two there are, however, which can be done in any hospital, however small, in the doctor's office, or in the patient's home. The concentration and dilution tests of renal function require only the estimation of urine volumes and specific gravities. These tests can be carried out on the same day by doing the dilution test early in the morning and the concentration some hours later. It is preferable, however, to do them on separate days.

The details are as follows.

The concentration test.—(*a*) Directions to the patient: For supper the day before this test eat a generous helping of meat, fish or cheese.

Drink only one glass of fluid; this may be of anything desired. Do not eat or drink again until the test is completed. Before retiring empty the bladder. All urine passed through the night is discarded. On waking in the morning pass urine into a separate container and save. Do this one hour later, and again at the end of another hour. For example, if you wake at 7.00 pass and save the urine. At 8.00 repeat the procedure and again at 9.00. Save all three samples. Remain in bed during the test.

(b) Interpretation. A normal person should have in one of these samples a specific gravity of 1025-1031.

The dilution test.—(a) Directions to the patient: Immediately on waking empty the bladder, and then drink one quart of water (1200 c.c.) within one-half hour. One-half hour after the water is drunk, pass the urine into a container, noting the amount. Save a sample. One-half hour later do likewise. Pass urine every half hour until eight specimens in all are obtained. For example, if you start the drinking at 7.30 a.m. and finish at 8.00 o'clock, collect specimens at 8.30, 9.00, 9.30 and so on, until you have collected eight. Remain in bed during the test and eat no food.

(b) Interpretation: A normal person should pass all or nearly all the ingested fluid in four hours and the specific gravity should be as low as 1002 in one sample at least. In the normal person the largest specimen and the lowest specific gravity are at the end of two hours.

On what physiological basis do these tests rest? Rehberg,[1] who has modified Cushny's theory of urinary excretion, believes that from 100 c.c. to 180 c.c. of water are filtered through the glomerular network per minute and about 99 per cent of it is reabsorbed by the tubules, which allows for the back diffusion of the non-threshhold substance controlled by the permeability of the cells of the tubules for the substance in question. He says: "The concentration power of the kidneys is probably best determined, or at any rate, most easily, by the maximum specific gravity to which they can concentrate."

There are certain details to be remembered in the management of these tests.

1. The patient should remain in bed while each test is in progress.

2. Specimens should be allowed to come to room temperature before specific gravity estimations are made. If considerable albumin is present allowance must be made for this, as pointed out by Lashmet.

3. As a rule markedly anæmic persons, otherwise normal, can neither concentrate nor dilute to a normal degree. With a red cell count of 2,500,000 and a hæmoglobin reading below 50 per cent the specific gravity may run from 1008 to 1014 in each test. It may be weeks or months after the restoration of these blood constituents to normal before the kidney can again concentrate or dilute to its accustomed capacity. Of course one must not forget that Bright's disease and severe anæmia may coexist. Again concentration and dilution may be fairly normal in some cases of marked anæmia.

4. Vomiting, diarrhœa, profuse perspiration invalidate the tests.

5. Extremely hot weather or fever will vitiate the tests.

6. Œdema as a rule precludes the use of these tests, but one is surprised to find at times normal results in cases of diffuse nephritis.

When the dilution test indicates diminished function both the specific gravity and the volume are reduced. As improvement occurs the specific gravity is usually the first to return to normal. It is sometimes noticed that with a total excretion of only 100 c.c. the density may sink to 1002. It is fairly common to see this specific gravity with 400 c.c. or 500 c.c.

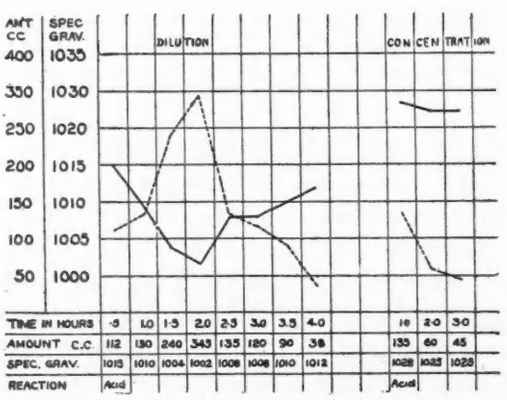

CHART 1.—Solid line = specific gravity. Broken line = volume.

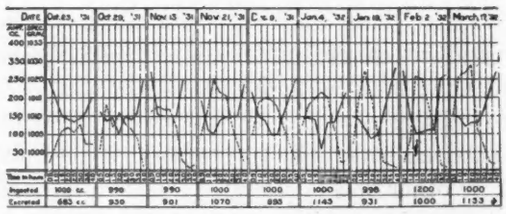

CHART 2.—Dilution test in acute diffuse nephritis. Solid line = specific gravity. Broken line = volume.

The normal tests are shown in Chart 1. As an example of returning renal activity Charts 2 and 3 depict the course of a patient, aged seven, who had an acute diffuse nephritis, the œdema and hypertension lasting but a few days, but marked hæmaturia for almost two weeks. It will be seen that the return to normal was slow. Often in patients with much more severe attacks all tests are normal in two months.

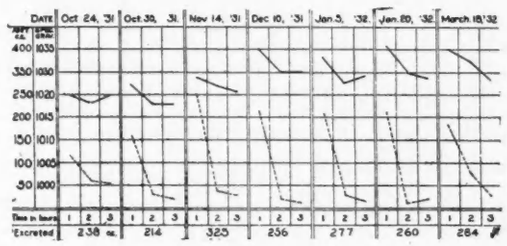

CHART 3.—Concentration test in acute diffuse nephritis. Solid line = specific gravity. Broken line = volume.

The material on which this paper is based consisted of repeated examinations on many normal persons, over 50 patients with Bright's disease in all stages of its various forms, on two persons with congenital cystic kidney, two with Addison's disease, several with cardiac decompensation, a number with functional albuminuria and a score with essential hypertension.* Some of those with Bright's disease have been carefully examined at intervals over a period of several years. More than 800 tests were done.

In order to estimate the value of these simple tests comparisons were made with several others. A number were used in almost every case, others less frequently. The tests of excretion most commonly employed were the urea-clearance introduced by Möller, McIntosh and Van Slyke,[3] and the phenolsulphonephthalein. The Addis cast count served as a valuable diagnostic and prognostic aid where it was used. The tests of retention used to the greatest extent were the non-protein nitrogen, creatinine and indican blood values.

As the urea-clearance is a comparatively new test one might ask what is expected of it? Bruger and Mosenthal[4] summarize their studies on normal subjects as follows: "The blood urea-clearance varies a great deal in normal persons. A fixation of the clearance values at a low level is necessary to establish the existence of an impairment of kidney function. A single determination as low as 52 per cent of normal is not necessarily an indication of diminished renal activity." Following their observations on patients with Bright's disease they say: "The urea-clearance is shown to be a valuable clinical adjunct in the study of renal function. . . clearance figures below 50 per cent always imply decreased renal efficiency." They believe that values between 75 per cent and 50 per cent should be considered in the doubtful range.

How do all these tests behave in the presence of albuminuria? That excretion of protein takes place in the glomeruli has been believed for a long time. The evidence of this obtained by glomerular puncture and brought forward by many observers is now generally accepted. Bieter[5] has supplied most convincing proof of this by his recent work. He showed that the conditions which would cause albuminuria in glomerular fish fail to do so in aglomerular fish. Ekehorn[6] declares that the leakage of albumin through the glomerular membrane "does not in itself imply the slightest change or alteration in the excretion of ordinary urinary constituents." He states also "that the degree of albuminuria bears no relation to the existence, absence or degree of renal deficiency." Volhard says that in lipoid nephrosis, where one finds the greatest quantity of albumin in the urine, the lessened output of water and chlorides is not due to inability of the kidney to excrete them but to extrarenal factors. The following case of functional albuminuria showed normal excretion as measured by the concentration and dilution tests.

CASE 1

A.C., male, aged 22. One and half years before admission albumin and casts were found in the urine. A diagnosis of Bright's disease was made and he was placed on a restricted diet and forbidden to swim. He had been refused life insurance because of the urinary findings. On several occasions before admission to hospital for examination, albumin and a few casts were found. There was no history of nephritis nor scarlet fever. His tonsils had been removed in childhood.

Physical examination showed no abnormality excepting slight lordosis and albuminuria. Blood pressure, 118/76; hæmoglobin, 95 per cent; red blood cells, 4,890,000; white blood cells, 7,500; non-protein nitrogen, 25 mgrm. per cent. Urine, specific gravity, 1020, acid, glucose negative, albumin. Microscopic, a few granular and hyaline casts and some red and white blood cells. Concentrated to 1028, the phenolsulphonephthalein excretion was 34 per cent in two hours. Postural test: first specimen, albumin, a trace; second, after half an hour lying in kyphotic position, no albumin; third, after ten minutes standing in lordosis, albumin.

* The non-protein nitrogen determinations were made on unlaked blood according to the method of Otto Folin.[2]

All specimens passed during a 24-hour rest in bed were free from albumin and casts. The Addis cast count was normal, showing 1,400 casts, 2,500 red cells, and 210,000 white cells.

It will be noted here that all tests of renal function carried out were normal, with the exception of the phenolsulphonephthalein. This was the most variable of all the tests used in this study.

What can one say of renal function in the presence of cardiac decompensation? Here albuminuria may co-exist with casts and red blood cells. There is œdema and often diminished urinary chlorides. The retention of water and chlorides in the tissues in this case is due to extrarenal causes.

In a previous paper the classification introduced by Volhard was modified, explained and illustrated. The tests carried out on patients with Bright's disease were on cases as defined there.

The normal figures for the concentration and dilution tests have been given. Some comments on the results of these tests in the various forms of this condition are in order.

Hæmaturic nephritis, which occurs at the height of an upper respiratory infection usually, has one cardinal sign—blood in the urine. The average case shows no retention of metabolites. As a rule the concentration and dilution tests are normal, but sometimes moderate and exceptionally marked impairment of renal function with nitrogenous retention is observed. In the latter event these tests will show the inadequacy of excretion, both qualitatively and quantitatively. In one of the cases studied the non-protein nitrogen was 310 mgrm. per cent on the 17th day of illness. On the 26th day the non-protein nitrogen was 157 mgrm. per cent and the urea-clearance was 19 per cent. On the 36th day the non-protein nitrogen was 37 mgrm. per cent, and with a normal blood count the patient could concentrate to only 1012, although he diluted to 1003 with an output of 1105 c.c.

The acute diffuse form of Bright's disease comes on generally from two to four weeks after an upper respiratory infection and is characterized by hæmaturia, œdema and hypertension. Progress toward recovery is less frequent than in the hæmaturic type, but when it does occur it is usually within two months. In such cases these tests are of paramount value in predicting delayed healing. If they are not normal at the end of a two month period chronicity may be predicted.

There are stages in diffuse nephritis when one may be misled because tests of renal efficiency may be normal. These are the periods when the acute stage is passing into the subacute, and again when the latter is lapsing into the chronic condition. One may be inclined to declare a patient healed during a quiescent stage. It is here that the extremely sensitive Addis cast count is particularly valuable. This is shown in the following two cases.

CASE 2

M.L., a female, aged 24, was admitted complaining of weakness for one month and swelling of the ankles for two weeks. Her tonsils had been removed several years previously. There was no previous history of nephritis. Mastoid disease occurred four years before, with operation and a perfect recovery. There had been some blurring of vision before admission. There was no history of sore throat.

Physical examination showed no abnormality but œdema of the ankles and slightly raised blood pressure. The fundi was normal. The urine contained albumin,

TABLE I

Patient M.L.

Date	Blood Count		Blood Chemistry							Cast Count				Urine					
	Hb.	R.B.C. in mill	N.P.N.	Ser. Alb.	Ser Glob.	Fibrinogen	Total Prot.	Chloride	Chol.	Casts	R.B.C.	W.B.C.	Bl. Pr.	Conc. Sp. Gr.	Dilution Sp. Gr.	Dilution Amt. c.c.	24 Hr. Alb. Grms.	Urea Clear	Phenolsulphonephthalein per cent in 2 hrs
Aug.	94	4.63	42	4.70	3.18	0.87	7.75		184	104,000 203,750 116,620	3,470,000 2,873,750 798,700	4,200,000 783,750 548,800	146/84	1038	1001	1870	5.6	21	52
Sept.			27	3.80	2.33	0.43	6.56			170,430	1,366,200	469,200	134/84	1038	1002	957	6.2	120	
Oct.			28	4.34	2.01	0.65	7.00	345		506,000	1,116,000	1,386,000	124/86	1026	1003	1010	5.4		
Nov.	85	4.71		4.99	1.44	0.66	7.09	256 496		792,000	1,287,000	1,815,000	126/84	1036			4.5		
Dec.	97	4.62	24	4.34	3.28	0.47	8.09						124/85		1002	980	6.8		

hyaline and granular casts, and red and white blood cells. Basal metabolism +12. Six days after admission double refractile bodies and a hæmolytic streptococcus were found in the urine. The refractile bodies were present for months and the streptococcus was cultured on three occasions within a period of two months. X-ray of the teeth showed no infection, nor did the pelvic examination reveal a focus. The Wassermann test was negative. Table I shows the results of various tests carried out. Lack of cooperation after five months prevented careful investigation. However, there was recurring œdema of the ankles, slight of the face, and considerable albumin in the urine for two years, when the patient disappeared from observation.

Here is an instance of an acute diffuse glomerulo-nephritis with normal concentration and dilution, but with a urea-clearance of only 21 per cent. The cast count remained high during the three months it was possible to have it done. The excess water excreted in the dilution test shows in a slight degree an instance of the "water push" of Volhard. He has called attention to the fact that sometimes in œdema after water starvation for several days the ingestion of 1,200 c.c. may bring about diuresis. It should also be noted that about the end of two months there was a normal concentration normal urea-clearance and in the dilution test only diminished volume of urine. These results suggested a return of renal efficiency. The cast count told a different story. The presence of double refractile bodies, which some claim is pathognomonic of nephrosis, and particularly at such an early stage of the disease, is worthy of note. These bodies have been found on numerous occasions by the author in cases that could not be construed as nephrosis on any count. In this case the cholesterol was too low for nephrosis and there were normal blood proteins. The globulin and fibrinogen, it is true, were higher than normal, but this is a common finding in nephritis due to infection. The œdema in such cases is the result of increased permeability of the capillaries.

CASE 3

S.McG., white, male, aged 31. Six weeks before admission he noticed swelling of thighs, ankles and face. There was no history of previous nephritis. Physical examination revealed œdema, as described. The urine showed albumin ++, many red and white blood cells, and blood and granular casts. The Wassermann test was negative. The patient remained in hospital six weeks. He felt well on discharge, but was informed that the renal lesion was unhealed. The second, third and fourth admissions were for the purpose of noting the progress of the disease. The fifth was at the patient's own request, as he felt weak and showed some œdema. The sixth was on account of severe headaches. Table II shows the essential details of this case covering a period of over two years.

Certain points are of special interest here.

1. The blood pressure became normal and the œdema disappeared within two months of onset. Microscopic urinary blood was not evident at this time.

TABLE II

Patient S.McG.

Date	*Blood*		*N.P.N.*	*Cast Count*			*Bl. Pr.*	*Urine*					
								Conc. Sp. gr.	*Dilution*		*24 Hr. alb. in gms.*	*Urea clear. per cent*	*Phenol-sulpho-neph-thalein per cent 2 hrs.*
	Hb.	*R.B.C. in mil.*		*Casts*	*R.B.C.*	*W.B.C.*			*Sp. gr.*	*Amt. in c.c.*			
31-1-31	100	6.	56	577,810	309,537,600	22,406,500	168/110	1017	1011	435	13.9	35	53
1-6-31	98	5.13	34	247,220	14,882,500	776,390	120/80	1020	1000	1325	1.09	65	45
9-9-31	95	5.21	39	330,000	7,480,000	1,782,000	124/80	1020	1000	1043	1.5	58	45
15-5-32	80	4.27	25				106/80	1020	1000	771	8.6	132	35
15-9-32	105	5.2	21	45,045	183,645	48,510	124/84	1020	1002	922	2.7	79	45
18-2-33	105	5.57	23	9,102	1,812,630	1,512,802	128/90	1023	1000	640	5.6	116	35

2. The non-protein nitrogen was not normal eight months later. It became so in fifteen months.

3. Dilution was normal in five months, but concentration was unsatisfactory at the end of two years.

4. The urea-clearance remained low till fifteen months after the acute stage.

5. The phenolsulphonephthalein excretion was never up to normal.

6. The concentration test and the Addis count show that the disease was present during the entire period.

7. The diminution of the output in the dilution test shows failure of the renal function.

From this case it is evident that one might have been misled at times by obtaining normal results from some of the tests, were it not for the concentration test and especially the cast count.

In the arteriosclerotic type of Bright's disease characterized by hypertension, renal function may remain normal for long periods. The height of the pressure seems to bear no relation to renal adequacy. It does appear that a rising diastolic pressure is of importance. What is of still more consequence is the age at which hypertension commences. The earlier in life the onset, the more rapidly does renal inadequacy result as a rule, but this of course has its exceptions. Many hypertensive patients succumb to vascular accidents or cardiac decompensation before the signs of kidney failure are noticed, but the two simple tests will give early indications of failing function.

SUMMARY

1. Two simple tests of renal function are described and compared with more complicated ones in the various forms of Bright's disease.

2. It is suggested that the concentration and dilution tests give all the information obtained from those more difficult of performance.

3. The first sign of waning renal efficiency appears usually in the dilution test and is shown by the inability of the kidney to excrete in four hours all the water ingested.

4. These tests are not so delicate as the Addis sediment count.

5. Certain conditions which preclude the use of these tests are mentioned.

If one adds to these simple tests of renal function blood-pressure estimations and blood counts the practitioner will be enabled to judge of the presence and extent of kidney damage in his patients, and familiarity with them will enable him to determine if other and more complicated procedures are advisable. But as in all tests judgment in interpretation comes from frequent use of them in all stages of Bright's disease as well as in normal individuals.

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OBESITY AND PREGNANCY.—S. Davidovici, whose work is based on sixty-two cases observed at the Baudelocque Maternity Hospital, Paris, during the period 1923-32, states that among 26,100 admissions the association of obesity and pregnancy, while not very frequent, is not exceptional. Apart from increase in weight the pregnancy in such cases is characterized by frequency of renal complications, though they are not usually of a severe character. The obstetrical diagnosis is usually difficult owing to the thickness of the abdominal wall. Labour is generally protracted and more frequently difficult than that in women who are not obese. The dystocia may arise at the engagement of the fœtal head in the pelvis, and it is very frequent to encounter difficult delivery of the shoulder. Delivery does not always take place naturally, as considerable hæmorrhage may occur and necessitate artificial delivery. Owing to the frequency of difficult labour the maternal death rate is fairly high on the days immediately following delivery. The children have always a weight heavier than normal. The causes of difficult labour in the cases are numerous—namely, poor quality of the muscles of the abdominal wall, lack of engagement of the head, the presence of masses of fat in the pelvis (reducing the normal diameters), feeble uterine contractions, and excessive size of the child. Although the prognosis is often gloomy, numerous obese women have a normal delivery. As a general rule such patients should be delivered in a maternity hospital. If operation is required the most rapid method should be chosen and spinal anæsthesia should be employed.—*Brit. M. J.*, 1933, **2:** Ep. 26.

THE TREATMENT OF DIABETES IN CHILDREN BY MEANS OF A NORMAL TYPE OF DIET*

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"If a true diabetic disposition develops in a child, it progresses relentlessly, however slight it may be at first, and even when the treatment is the best in the world. Infantile diabetes knows no mercy; one can at most only defer the end for a little time."

Von Noorden, 1905.

"The living diabetic child is the most outstanding medical accomplishment of the past decade."

Priscilla White, 1932.

THE change which has been wrought in the prognosis of childhood diabetes in the last ten years is nothing short of remarkable. Von Noorden's remarks are typical of the attitude of enlightened medicine towards this disease—an attitude which persisted until the insulin era. Before that time the disease when it occurred in children was considered hopeless, and even though life was maintained for a while it was done only at the expense of extreme undernutrition and invalidism. The body paid for survival with its own tissues, and the photographs of diabetic children, taken as recently as fifteen years ago, bear mute testimony to the ravages of the disease.

With the introduction of insulin in 1922 a wonderful change occurred. It was now possible for the diabetic child to live. The diagnosis of diabetes in a child no longer meant the signing of a death warrant. The following figures quoted by White show the change that occurred:

TABLE I
STATUS OF 750 DIABETIC CHILDREN IN 1931

Era		*Total Cases*	*No. living Oct., 1931*	*Percentage living*
Naunyn	1898 – 1914	61	1	2
Allen	1914 – 1922	170	49	28
Banting	1922 – 1931	519	483	93

Although the results of a decade of insulin therapy would, therefore, appear to be extremely happy, there are some features which are far from satisfactory. The leaders in medicine were quick to take advantage of the opportunities which insulin presented. The great bulk of the profession, however, considered insulin as an emergency drug to be used in cases of coma and severe acidosis, but to be dispensed with as soon as possible afterwards. The result was that insulin was made the constant and diet the variable. The constant was set at zero as the optimum and the diet made to conform. Where the exhibition of a few units of insulin daily would have made the use of a reasonable diet possible, it was considered preferable to "get along" on a restricted diet and "save" the child the annoyance of frequent injections. Thus, although children were kept alive by the use of insulin in coma and pre-coma their condition at all other times was not one to gladden either the eye or heart. Thin, stunted, weak, hungry—many would indeed have been far better dead. Their meagre diet supplied barely enough to carry on a miserable existence. In many cases they were unable to attend school. In a worthy attempt to supply as much energy as was possible without insulin, high-fat diets were used. These diets proved irksome in the extreme to many of these children. They were altogether different from the diets their fellows ate, and infinitely less appetizing. The result was temptation and dietary indiscretions. The frequent occurrence of infractions of diet, coupled with the natural frequency of infections in childhood, meant several trips to the hospital each year and a battle with acidosis which was won only as a result of the prompt use of insulin. It was not until 1926 that the reaction against high-fat and starvation diets in the treatment of diabetic children became manifest, and it was not until two or three years later that any but the larger clinics began to experiment with rational diets.

Sansum and Geyelin in this country, Porges and Adlersberg in Europe, were among the leaders in the new movement. It was their contention that diabetic diets should approach the normal diet as closely as possible, and that insulin should be used as required in order to maintain normal body metabolism. In other words, a rational diet was to be *the constant* and

* From the Diabetic Clinic of the Winnipeg Children's Hospital and the Department of Pædiatrics.

insulin *the variable*. Sansum favoured a high carbohydrate intake and keeping the carbohydrate-fat ratio at 2:1. He pointed out that with such a diet normal physical and mental development occurred, that acidosis would be less likely to occur, that as the diet would be practically a normal one there would be far less chance of the child breaking his diet. In addition he suggested that the use of such a diet would result in continuous stimulation of the pancreas so that there would actually be an increase in carbohydrate tolerance and less insulin would have to be used.

The present study was begun in 1929, and to date ten cases of diabetes in childhood have been followed for varying lengths of time. All the new cases were placed on a moderately high carbohydrate diet. Some of these had been on a high fat diet for varying lengths of time before being seen in our clinic. Some were placed on the diet within a few days of the onset of symptoms of the disease. Two cases were allowed to remain on a high fat diet but were finally changed over to a normal diet. Insulin was used in every case.

Early in 1930, at the suggestion of Dr. Gordon Chown, a diabetic clinic was organized at the Children's Hospital, including a visiting dietitian, a resident dietitian and a biochemist. All public diabetics were admitted to this clinic, and an organized policy of education and follow-up work was started. Children over six years of age were taught to do their own measuring and cooking, to measure and give their own insulin, to do their own urinalyses, and to know the symptoms of hypoglycæmia and its treatment. In the case of younger children the mother was fully instructed. After discharge from the hospital, the homes were visited quite frequently at first, then only occasionally, so that there was no difficulty in the following out of instructions. Too often in the past the first few weeks have spelled disaster for the diabetic. The already worried parent, confronted with a maze of instructions, not always as simple as they might be, breaks under the strain, and it is next to impossible to obtain cooperation from then on. By using a visiting nurse, specially trained for diabetic work, the change from hospital to home has been made very much easier. The results, we think, have been satisfactory. There have been no diabetic deaths at the Children's Hospital since the clinic was started almost three years ago. The admissions in coma have decreased markedly, and all the children are leading normal, useful lives.

It has seemed to us that although the high carbohydrate diet has many advantages over the high fat diet, it is fundamentally just as wrong. Both are abnormal diets. In our series we have given our patients diets which are practically normal and have supplied insulin in sufficient dosage to keep the diabetes well controlled. The procedure followed with all the new cases was to place them at once on the desired diet, without an intervening period of starvation and without waiting for the urine to become free of sugar. Insulin was then used in sufficient quantity to control glycosuria. No attempt was made to keep the patients sugar-free. If the urine remained free of acetone and diacetic acid and contained not more than 12 to 15 grm. of sugar in the 24-hours' specimen, we were satisfied.

The following gives the details relative to our ten cases.

CASE 1

B.I., aged 20 months, had been well until two weeks before admission. The family history was negative for diabetes. In March, 1930, he had had whooping-cough which was followed in July by chicken-pox. Towards the end of July, it was noted by his parents that he was irritable, was losing weight, and was drinking large quantities of water. He developed increasing drowsiness. His parents consulted Dr. Gordon Chown who made the diagnosis of diabetes mellitus and referred the case to the hospital. The blood sugar on admission was 300 mg. The urine was loaded with sugar, diacetic acid and acetone.

The acidosis cleared up in twelve hours after the use of 95 units of insulin, and the patient was promptly placed on a diet of P. 38, F. 38, CHO. 95. This was increased two days later to P. 50, F. 50, CHO. 100; fourteen units of insulin were used. Shortly after his discharge from hospital he began to have insulin reactions and it was found necessary to reduce his insulin to 8 units per day. His diet was increased to P. 60, F. 65, CHO. 120.

In two and a half years his course has been entirely uneventful. The urine is always free of acetone and diacetic acid. The morning specimen of urine usually contains a small amount of sugar. The other specimens are negative. His physical condition is excellent. He has weathered two acute upper respiratory infections with no more inconvenience than a few days in bed and a temporary increase in the dose of insulin. His mother states that apart from the two injections of insulin every day, "he is no different from the other children."

CASE 2

H.P., aged 18 months, was well until a few days before admission on July 3, 1931, when the classical symptoms of thirst, polyuria, polydipsia and drowsiness developed. The urine was loaded with sugar, diacetic acid and acetone. The acidosis was corrected in 24 hours, and she was put on a diet of P. 45, F. 45, CHO. 90, with 10 units of insulin. Three weeks later she was readmitted because of acidosis which resulted

when her parents, contrary to instructions, stopped giving insulin at the onset of an acute upper respiratory infection. The patient recovered rapidly, was placed on a diet of P. 50, F. 55, CHO. 115, with 14 units of insulin and has pursued an uneventful course ever since. Her last blood sugar was reported as 146 mg. She averages one positive urine specimen per day. The rest are negative. Acetone and diacetic acid have not been present on repeated examination.

CASE 3

S.S., aged 5, developed polyuria and polydipsia during an attack of mumps in March, 1931. One sister, two cousins and an uncle had succumbed to diabetes. The boy was admitted to the General Hospital in coma. The blood sugar was 0.36 per cent, and the urine was loaded with sugar, diacetic acid and acetone. His mother objected very strongly to the use of insulin, and as a result he was discharged on a diet of P. 30, F. 120, CHO. 40, with no insulin.

The patient had a very bad summer. He had frequent attacks of vomiting, was on the verge of coma twice, and lost considerable weight, he was admitted to the Children's Hospital in September, 1931, and was promptly placed on a diet of P. 50, F. 60, CHO. 125, with 8 units of insulin. He has done very well since, has handled two acute infections easily, and has gained in weight. It has been found necessary to redistribute his carbohydrate because of a tendency to hypoglycæmia in the evening. His insulin dosage has been reduced to 6 to 7 units per day. He is attending school full time.

CASE 4

H.Z., aged 8 years, was first found to have glycosuria in April, 1931. He was admitted to the Winnipeg General Hospital in a state of acidosis. His blood sugar was 298 mg. He was discharged

FIG. 1

FIG. 2

in May on a diet of P. 50, F. 100, CHO. 50, with 20 units of insulin. His course from then until his admission to the Children's Hospital in September, 1931, was very satisfactory. His urine was never free from sugar and rarely free from diacetic acid and acetone. His diet was not such as to tempt his palate, so that he frequently obtained food from other sources to supplement and at times even to replace it. His weight increased four pounds in six months. His insulin requirement had increased to 35 units.

On admission to the Children's Hospital in September he presented a pathetic picture (Fig. 1). He was thin, tired, drowsy and absolutely devoid of any ambition. He was promptly placed on a diet of P. 65, F. 50, CHO. 130. He was balanced on 30 units of insulin. The change in his condition can only be described as miraculous. He gained sixteen pounds in nine weeks, his insulin requirement dropped to 14 units, and he resumed his normal status of a happy contented school boy (Fig. 2). His course has been uneventful ever since.

CASE 5

G.S., aged 12, was first diagnosed as a case of diabetes mellitus in August, 1928. She was admitted in diabetic coma with a blood sugar of 430 mg. and the urine loaded with sugar, diacetic acid and acetone. For three years after that she was kept on a high fat diet with 20 units of insulin. Her condition on October 1, 1931, was summarized as follows: she has had diabetes for over three years; she is physically very much below par; she is not strong enough to go to school; she has been admitted repeatedly in coma, and has nearly lost her life on more than one occasion; her blood sugar is normal; her diet is distasteful to her.

On that date she was changed over to a diet of P. 65, F. 50, CHO. 125, with 30 units of insulin. Her condition on February 1, 1932, was summarized as follows: the child has been on her new diet for three months, is greatly pleased with it and is not hungry, she is gaining in weight; is attending school; and her whole mental outlook has changed; she is now full of ambition; she has had two upper respiratory infections without developing acidosis; she averages one positive urine specimen a day.

Late in the fall of 1932 this girl gave a group of fourth year medical students a blackboard demonstration on diet in diabetes, working out her own daily diet, and answering a score of questions.

CASE 6

R.T., aged 15, was first diagnosed as suffering from diabetes in 1927. Her fasting blood sugar was then 240 mg. Dietary treatment was instituted with high fat and low carbohydate. At first she responded well, gained in weight, felt well, and remained sugar-free. However, she would not obey instructions and her condition soon became worse and in August, 1928, she was admitted in coma. From then until January, 1932, her story was that of a great many other diabetics. Every possible means was taken to try and get along with as little insulin as possible. She was placed on starvation diet and on high fat diet, first the one and then the other, with the result that she paid little or no attention to her diet and even with an insulin dosage of 45 units a day, her diabetes was uncontrolled. She was brought back to the hospital in coma on four occasions.

Towards the end of 1931 it was noted that she was getting fat and that the blood serum was frequently milky. In January, 1932, following an admission in coma, it was found that her blood sugar was 0.33 per cent, and her blood cholesterol 580 mg. per 100 c.c. She had definite xanthoma diabeticorum. No lipæmia was noted in the retina, although the eyes were carefully examined on several occasions. At this stage she was transferred to a high carbohydrate diet. Within a few days the blood sugar fell to 230 mg., and the cholesterol to 160. The skin lesions cleared rapidly. There was no glycosuria.

During the rest of 1932 she ran an interesting course. She continually reported that the only positive urine specimen was the early morning one and that at all other times her urine was negative for sugar. The fasting blood sugar, always taken in the morning, continually showed a hyperglycæmia as high as 420 mg. In spite of this she reported that on more than one occasion she was having insulin check in the afternoons. She was admitted for a day for serial blood sugars following a suggestion made by Dr. Kern, with the following interesting findings:—

TABLE II

Time	*Blood sugar*	*Urine sugar*
7 a.m.	330 mg.	Positive
9 a.m.	154 "	Positive
5 p.m.	75 "	Negative

At this time R. was transferred to the Winnipeg General Hospital, as she was beyond the age-limit for the Children's Hospital. I am indebted to Dr. Warner for permission to report the rest of the history.

R. continued to put on weight and to show morning glycosuria until January, 1933, when the blood sugar was found to be 420 mg. The serum was so milky that a blood-cholesterol estimation was done, which showed 855 mg. She had a well marked lipæmia retinalis. She was admitted to hospital for regulation. Two weeks later, as she continued to show glycosuria and the blood sugar and cholesterol remained high, it was decided to repeat serial blood sugars. The results were as follows:—

TABLE III

Time	*Remarks*	*Blood sugar in mg.*	*Urine sugar in g.*
7.30		320	16 g./480 c.c.
7.45	Insulin XXV		
8.00	Breakfast		
8.30		350	
10.00		230	4.2 g./300 c.c.
11.45		180	
11.50	Insulin X		
12.00 noon	Lunch		
2.00		170	0.9 g./400 c.c.
4.45		40	
4.50	Insulin X		Negative
5.00	Supper		
7.00		110	
11.00		40	Negative
3.00 a.m.		160	Negative

Total 24 hour spec. 16.1 g. in 2820 c.c.

It was decided to redistribute her insulin so that she received 25 units at breakfast, none at noon, 20 units at supper, and 10 units at midnight. Two weeks later her blood sugar was 170 mg. and her blood cholesterol was 167 mg. Her fundi were negative and the skin lesions almost gone. At this date (March 20, 1933) she is carrying along well.

CASE 7

E.A., aged 6 years, was sent in from the Red Cross Nursing Station at Rorketon with a diagnosis of diabetes mellitus. There was a history of diabetes in an uncle. This girl's symptoms preceded her admission to hospital by a few weeks.

On admission the urine was loaded with sugar, diacetic acid and acetone. Her weight was 34¾ pounds. Her blood sugar was 0.253 per cent. She was promptly put on a diet of P. 50, F. 50, CHO. 110, with 12 units of insulin. On February 13, 1931, six weeks after admission, her weight was 36 pounds. She was discharged to her home. No chest plates were taken. Several months later a letter was received from Rorketon informing us that she had died of tuberculosis complicated by empyæma.

CASE 8

W.H., aged 10 years, was admitted in December, 1932, with the history of marked loss of weight, polyuria and polydipsia. Examination at the time of admission showed him to be in a state of marked acidosis. He had had acute catarrhal jaundice in February, 1932, at which time several urinalyses were negative for sugar.

He was promptly placed on a diet of P. 55, F. 55, CHO. 125. On this diet he was hungry and did not gain weight. His diet was increased to P. 70, F. 65, CHO. 165, with 22 units of insulin. On this diet he has done splendidly and the photographs show very well the change which occurred in the short period of six weeks. He is at present going to school, administering his own insulin, and doing his own urinalyses.

CASE 9

M.G., aged 10 years, was well until March, 1930, when she began to lose weight in spite of a greatly increased appetite, tired easily, and felt weak, although she felt well enough to stay on her feet. In July she began to have polydipsia and polyuria. She was admitted to the General Hospital in September, 1930, with a blood sugar of 230 and urine full of sugar, acetone and diacetic acid. She was put on a diet of CHO. 47, P. 40, F. 100. Her weight was 43½ pounds. On this diet she was sugar-free, but showed ketonuria and did not like her diet. As she did not gain in weight, her diet was increased to CHO. 70, P. 50, F. 136, with 6 units of insulin. She was discharged weighing 50 pounds.

She was readmitted in January 1932. She was showing acetone and diacetic acid in her urine constantly, did not like her diet, and was breaking it constantly. It was decided to change to a diet of CHO. 100, F. 50, P. 60. Her weight was 56 pounds. She now required 18 units of insulin, which was given in three doses a day. It was noted that fat atrophy had appeared in her right arm and she was cautioned and reminded to alternate the sites of insulin injection. She did not follow instructions, however, and continued to inject insulin in one site, this time the right thigh and a severe degree of fat atrophy developed here. However, it is questionable whether the mere number of injections were of a great deal of importance, since the left thigh showed the same condition although she had only a few injections in this area and they were given in the ward. In February, 1933, she was doing fairly well, but was breaking her diet from time to time, and passing a good deal of sugar in the urine. Hospitalization for twenty-four hours resulted in disappearance of sugar from the urine, without any change in diet or insulin. She now weighs 63 pounds.

CASE 10

R.A., aged 5 years, was well until July, 1932, when he began to develop excessive thirst, frequency, and loss of weight. There were two cases of diabetes in the immediate family. R. was admitted to a rural hospital where he was rescued from coma by the use of insulin. His weight at that time was 40 pounds. He was placed upon a diet, but no insulin was used. He continued to lose weight and to show a great deal of sugar in the urine. He was admitted to the Winnipeg General Hospital in March, 1933.

He was drowsy, terribly dehydrated, and his weight was down to 31½ pounds. In addition he showed marked carotinæmia, the blood sugar was 0.33 per cent and the urine was loaded with sugar, diacetic acid and acetone. He was promptly placed on a diet of P. 50, F. 50, CHO. 110, with 15 units of insulin daily. The diet was rapidly increased to P. 60, F. 65, CHO. 125, as the sugar rapidly decreased in his urine, and on the tenth day after admission he was actually in mild insulin shock. He gained 5 pounds in his first two weeks in hospital and is now up and about the ward. His blood sugar is normal and the 24-hour specimen contains less than 10 g. of sugar daily.

DISCUSSION

Our experience with the foregoing cases would seem to justify the following statements.

1. The diabetic child should be given a diet

conforming as closely as possible with the normal diet of a normal child.

2. Insulin should be used in every case where the child is unable to handle such a diet without a glycosuria of more than 15 g. in the twenty-four hours or a blood sugar content of over 160 mg.

3. Under such a régime and with careful supervision in the first few weeks of the disease one may reasonably expect that

(a) The child will grow normally in weight and height. The accompanying Table illustrates the growth of some of these children. It should be noted that cases 1 and 2, which were on a high carbohydrate diet from the start, show no apparent deviation from normal. The cases treated for a time on high fat diets and later changed to high carbohydrate seem to be of particular interest. The change in appearance, nutrition and facial expression was self-evident.

(b) The child will be able to assume his normal position in life. Invalidism should have no place in the life of a diabetic child. Case 5 is a splendid example of a case in point. G. had missed one and one-half years' schooling. On returning to school her report showed the rapidity with which she made up for time lost. In a few months she rose from twenty-second to second in class, and has since led the class at examination time.

(c) These children will be able to handle the many acute infections of the first ten years of life. The very nature of a high carbohydrate diet acts as a measure of protection against acidosis. All the cases on high fat diets were continually battling with acidosis and coma. Contrast this with cases 1 and 2, who have not been in acidosis for two years in one case, and two and one-half years in the other. Both these children have withstood several acute infections with no more inconvenience than an increase in insulin dosage for a few days.

(d) There will be no trouble as regards the child taking the diet. A high fat diet is an abnormal diet for a child. It creates a distaste for food, so that frequently the child exists in a state of semi-starvation, until it learns the gentle art of getting other food elsewhere; almost before one is aware of it, the diabetes is out of control and cooperation with the child becomes a matter of increasing difficulty.

(e) The change from a low carbohydrate to a normal diet often means very little if any change in insulin requirement. It may even, as in case 4, result in a decrease in the amount required.

TABLE IV

DIET

Name		*Age in years*	*Wt. in lbs.*	*Protein in grams*	*Fat in grams*	*Carbo. in grams*	*Total calories*	*Cal. per lb. body wt.*	*Insulin units per day*
H.	A.	3	30	40	50	100	1010	33.7	18
	N.			38	48	146	1170	39	
B.	A.	3	30	55	60	125	1260	42	12
	N.			38	48	146	1170	39	
H.Z.	A.	10	62	50	65	130	1305	21	14
	N.			66.5	84	256	2046	33	
W.	A.	10	60	65	60	140	1360	23.3	30
	N.			64	81.5	247.5	1980	33	
M.	A.	12	56	60	50	125	1190	21.2	18
	N.			56	71.5	217	1736	31	
G.	A.	14	78	50	75	125	1375	17.6	32
	N.			73.5	93	283	2262	29	

A.—Actual diet. N.—Normal diet for age and weight.
Figures according to Sherman's standards.

SUMMARY

1. Ten cases of diabetes mellitus in children are presented.

2. The condition of children on high fat and on normal diets is compared and contrasted.

3. The importance of making a normal diet the constant and insulin the variable is stressed.

The author wishes to express his appreciation to Miss W. Moyle, visiting nutritionist of the Children's Hospital, for her invaluable assistance.

A CASE OF ANGIO-ENDOTHELIOMA OF BONE WITH HÆMOTHORAX DUE TO PLEURAL METASTASES*

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ANGIO-ENDOTHELIOMA of bone is a very rare tumour. Codman,[1] in 1925, stated that no tumours of this type had been recorded in the Bone Registry. Kolodny,[2] in his analysis of the cases of the Bone Registry, found only two cases of angio-endothelioma in the collection. These two cases he himself had previously reported,[3, 4] one in 1924, the other in 1926. Much confusion has existed regarding this tumour; its rarity and its semblance microscopically to secondary adeno-carcinoma frequently makes diagnosis from sections difficult. A close resemblance to secondary bronchogenic carcinoma in bone has been noted by Hirsch and Ryerson.[5] Angio-endotheliomata are seldom diagnosed clinically or radiologically. Their clinical appearance varies widely, as is shown by Kolodny's two cases: one a multiple tumour in a woman of 48; the other a solitary tumour in a girl of 10 years. One died with metastases 9 months after the onset of her symptoms; the other died with metastases four and a half years after onset. Both of these cases had chest metastases; neither had hæmothorax.

The rarity of the tumour and the difficulty in clinical and radiological diagnosis in these cases would seem to warrant reporting all cases of this disease, particularly a case where the combination of clinical and radiographic findings allowed of a correct diagnosis. The essential points in arriving at the diagnosis in this case were: (a) true hæmothorax; (b) visualization of pleural metastases by means of replacement pneumothorax; (c) the presence of a primary malignant tumour of bone. Further interest was found in this case by the presence of pure blood in the pleural cavity. New growth, either primary or secondary involving the pleural surfaces, often causes blood-tinged fluid in the pleural cavity. However, fluid which is difficult to distinguish from pure blood is rarely found unless there has been trauma to the chest. The case we are reporting presented severe shock and exsanguination as the result of massive pleural effusion of almost pure blood. This hæmorrhage occurred from pleural metastases arising from a primary angio-endothelioma of the femur.

CASE REPORT

L.B., a white male, aged 32, was admitted to the medical wards of the Toronto General Hospital, February 26, 1931, complaining of great weakness, shortness of breath and spitting of blood. In November, 1930, he had a rather bad fall from his bicycle and noticed that pain persisted longer in his right hip region than in other parts injured at the time of the accident. About January 1, 1931, he began to cough up small quantities of blood and felt weak and feverish; sputum was present, which was almost constantly blood-tinged, apart from spitting of pure blood. He complained of weakness in the right leg and thought the leg became smaller than the left. The pain in the right leg was worse on walking or standing. On February 1 he had a sharp pain in the right side of his chest, made worse on breathing. From February 20 he became rapidly worse with marked shortness of breath, pallor and great weakness. These symptoms continued until admission to hospital on February 26.

On admission the patient was desperately ill, very pale, perspired freely and was markedly dyspnœic. He appeared to be suffering from shock and hæmorrhage. Physical examination of the chest showed prominence of the right side with markedly impaired resonance (dullness) over the entire right chest with absence of breath sounds, vocal resonance and fremitus. The mediastinum was displaced toward the left. His temperature was 102°; blood pressure 94/60. The right leg showed definite atrophy of muscles, with no group paralysis or sensory changes. Pain was elicited by pressure over the upper third of the femur. The urine was normal; red blood count 2,000,000; white blood count 9,800; hæmoglobin 40 per cent.

A diagnosis of massive pleural effusion was made. X-ray examination of the chest showed a massive shadow over the entire right side of the chest, with shifting of the mediastinum to the left. The right diaphragm could not be seen, nor could any detail of lung structure be made out in the right lung. The diagnosis was confirmed.

A diagnostic pleural puncture was done and 1,000 c.c. of fluid, which appeared to be blood, was removed. Examination of the fluid showed a hæmoglobin content of 35 per cent; the patient's blood showed 40 per cent. Malignant cells were found in the fluid. The patient appeared to be so exsanguinated by hæmorrhage into his pleural cavity that two blood transfusions of 500 c.c. each were given. On March 2 a replacement pneumothorax was done to relieve his dyspnœa by replacing the heavy blood with air and to obtain further radiograms of the chest. At this time, 2,800 c.c. of blood were removed and 1,900 c.c. of air injected. Again on March 3, 1,500 c.c. of blood were removed and 1,000 c.c. of air injected, so that since admission seven days previously 5,300 c.c. of blood had been removed from his right pleural cavity. He felt very much more comfortable.

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X-ray of his chest now showed marked collapse of the right lung; a large pneumothorax was present with fluid at the base. In the collapsed lung could now be seen a group of dense rounded discrete shadows. Two similar but smaller areas were present on the parietal pleura posteriorly. The x-ray findings were interpreted as due to pulmonary and pleural sarcomatous metastases. (See Fig. 1).

X-ray examination of the right femur showed a lesion involving the upper inner aspect of the shaft of the bone and extending into the lesser trochanter. About one-fourth of the circumference of the bone appeared to be involved for a distance of about three inches. The lesion was destructive in type; there was no attempt at bone repair; no periosteal reaction. The cortex was destroyed over an area about one and one-half inches long immediately below the lesser trochanter with a ragged irregular area of medullary involvement beneath. An indefinite mass was seen in the soft tissues where the tumour had apparently broken through the periosteum. The radiographic findings were those of a primary malignant bone tumour and were interpreted by Dr. Richards of the department of radiology as being due to angio-endothelioma of bone. (See Fig. 2). This opinion was substantiated by the association of a primary malignant tumour of the right femur and metastases in the right lung and pleura with hæmoptysis and hæmothorax.

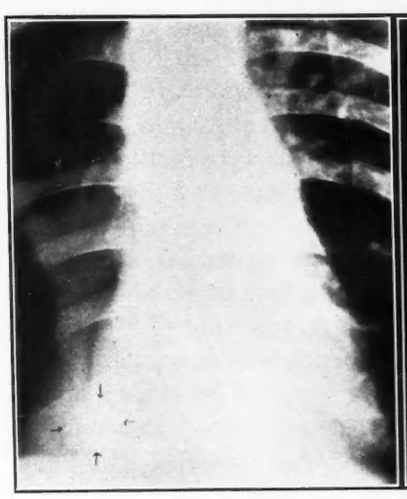

FIG. 1

FIG. 2

The essential post-mortem findings were as follows:

Chest.—The right pleural cavity was voluminous and partially filled with dark red bloody fluid in which were a small number of clots. The lung was collapsed and adherent to the medial aspect of the diaphragm. Web-like layers of friable fibrinous sheets were suspended from the collapsed lung to the lateral pleural wall. The inner surface of the parietal pleura was irregularly coated with blood clots, some of which surrounded and coated firm greyish nodules of tumour growth. A large knob of tumour mass was encountered on the upper surface of the diaphragm at the junction of the outer and inner two-thirds: this measured 3.5 by 2.2 by 1.7 cm. A second firm nodule lay within the costophrenic angle; this measured 2.2 cm. in its greatest diameter and possessed an intensely hæmorrhagic surface. Tumour masses were completely limited to the pleura, except where nodules originating in this site had invaded adjacent lung tissue. The largest nodules, relatively soft, spongy and very hæmorrhagic, were apparently the origin of the great hæmorrhage into this cavity. One tumour was found on the left parietal pleura.

Right thigh.—The marrow of the right femur was in great part replaced by soft pulpy hæmorrhagic tissue. The shaft of bone was irregularly eroded, the periosteum stripped, and within the adjacent medially situated muscle tissue was a rounded hæmorrhagic tumour mass, measuring on its external surfaces 6.5 by 4.5 cm. in its greatest diameters.

Microscopic report.—The one section taken from the primary growth in the femur was made up of red cells, fibrin, degenerating polymorphonuclears and large fields of necrotic structureless debris in which no cellular detail could be made out. A section from the oval tumour mass encroaching upon the thigh musculature showed large fields of tumour growth in small remnants of invaded skeletal muscles. In these sections the tumour cells were of an endothelioid character, many being elongated or almost spindle-shaped. They appeared singly and in narrow columns, while in somewhat longer groups central lumen formation was being established. In many fields atypical vascular channels were formed, lined with irregular atypical endothelial cells varying greatly in size, cytoplasmic content and in their nuclei. In some of the larger vessels free blood was circulating and in some few of the channels detached tumour cells were present. These tumour cells, appearing either in cords or as well formed vessels, were in these sections embedded in a pale staining myxomatous and, in some areas, almost mucoid stroma. The margins of the section were coated with extravasated blood and some fibrin. (See Fig. 3).

Sections from the lung at the site of tumour formation showed little remaining recognizable lung parenchyma. Tumour growth was present similar to that noted in the mass from the thigh with the same peculiar stroma reaction being present in these sections. Associated with the growth in these sections there was hæmorrhage and, in some areas, widespread necrosis.

Sections taken through the nodules noted on the pleural surface showed them to be made up of small mounds of tumour growth, similar in all respects to the tissue described in association with the soft tissues of the thigh. All of these sections were hæmorrhagic in many areas and their surfaces coated with large amounts of hæmorrhage and fibrinous deposits.

The anatomical diagnosis was hæmangio-endothelioma of the femur (right) with secondary hæmangioma of liver, lung and pleura and muscles of thigh (right); hæmothorax (right). Notanda: The primary growth had perforated the cortex of the right femur and was extending into the adjacent soft tissues as a

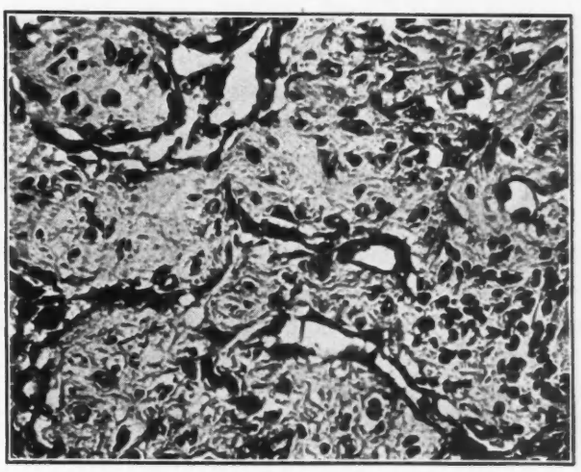

FIG. 3

rounded hæmorrhagic mass. Death followed massive hæmorrhage into the right pleural cavity, the pleura of which was studded with numerous large secondary masses.

DISCUSSION

The rarity of true angio-endothelioma of bone would seem to warrant reporting all cases of this type. In this case, symptoms were present for five months only prior to death from metastases arising from primary malignant bone tumour. During his illness the symptoms referable to his primary tumour were not severe: the whole picture was overshadowed by symptoms due to pleural metastases which bled, producing hæmothorax, and resulting in death from hæmorrhage. Hæmothorax is present usually only as the result of trauma to the chest. Tumour involvement of the pleura may cause bloody fluid in the pleural cavity, but one rarely sees true hæmothorax. The vascular character of the angioma was undoubtedly the cause of the massive hæmorrhage in this case. Therefore, in hæmothorax due to tumour one should suspect some vascular tumour such as angioma. However, this massive hæmothorax obscured the underlying pathological process and only after replacement pneumothorax could the metastatic sarcomatous nodules on the pleura be shown by x-ray.

Whether his injury, the fall from his bicycle, was the exciting cause of his primary tumour or merely called attention to a pre-existing tumour is speculative. The onset of pain immediately after the injury would be in favour of a pre-existing tumour. The presence of hæmothorax from pleural metastases of a sarcomatous type, accompanied by the presence of a primary malignant tumour of bone, led to the diagnosis of angio-endothelioma of bone. It would seem from the autopsy confirmation of this diagnosis that in cases of true hæmothorax from secondary sarcoma the possibility of a primary malignant bone tumour should be borne in mind.

CONCLUSIONS

1. A case of angio-endothelioma of bone with pleural metastases is reported.
2. The pleural metastases from this tumour caused massive hæmothorax and death from hæmorrhage.
3. Replacement pneumothorax is a valuable diagnostic procedure in cases of massive pleural effusion where neoplasm is suspected.
4. The combined presence of hæmothorax due to metastatic new growth and a primary malignant bone tumour led to a correct ante-mortem diagnosis.

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HEREDITY AND POLYCYSTIC DISEASE OF THE KIDNEYS

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INBORN errors of development occur in all parts of the body and affect all tissues, from the blood, the most liquid, to the bones, the most solid. Investigation to-day shows how great a part heredity plays in the etiology of the many ills to which flesh is heir, and as time passes still more diseases will be included in the nomenclature as familial in character. Polycystic disease of the kidneys is one of the rarer disorders which affect mankind. The records of the London Hospital for 25 years (1900-1924) show only 79 cases among 389,773 indoor patients (approximately 1 in 5,000).

The incidence of this disease of the kidneys has demonstrated that heredity plays as important a part here as it does in such affections as mental deficiency, blood disorders, diabetes insipidus, and deformities of the palate, lips or limbs. Excellent reports on the inheritance of congenital cystic disease of the kidneys have been presented by several writers, notably Osler, Cairns,[1] Bull, Borelius, Crawford[2] and Fuller.[3] The application of Mendel's law to this condition is suggested by a study of the genealogical graphs published by these authors. Thus in many instances one finds the mode of transmission is that which is characteristic of the single dominant progenitor. The disease is not

sex-linked, both males and females being affected. An analysis of the pedigrees shows that both males and females who are affected may transmit equally to the progeny of either sex. The percentage of children affected when one parent is normal, the other subject to polycystic disease of the kidneys, is not incompatible with what one would expect if this were due to a dominant factor, namely 50 per cent. It is true that frequently less than half the children of a family are reported as affected, but one must remember those who died young, and those who have not yet reached the age at which the disease might be expected to be evident must be considered. Without a careful clinical and physical examination or autopsy, many cases will undoubtedly be overlooked, and therefore the percentage of cases reported will undoubtedly be lower than the actual one.

The question as to whether the disease may skip one or more generations is not easy to answer. A more extensive research may show that latency does occur, although it is thought that many persons who were considered unaffected would have shown the disease if an examination had been made, either during life or at post-mortem. A careful study will, I am sure, show that the number of "isolated" cases is rare, although undoubtedly there are cases of polycystic kidneys in middle-aged people whose parents are living and apparently in good health.

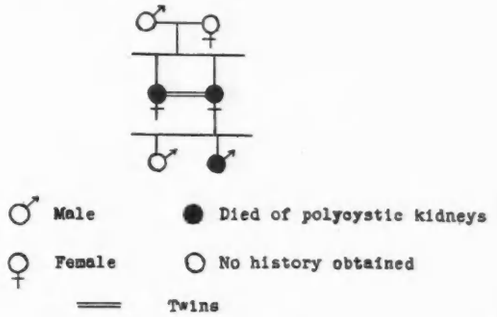
The transmission of the disease by an apparently normal person in a pedigree in which the character has been acting as if it were a dominant is to be explained by the fact that most probably the kidney condition was not diagnosed, and not by the fact that it did not exist. Post-mortem examinations have shown that polycystic disease of the kidneys may be present even in persons well on in years who at no time have had symptoms; a patient may die from a disease such as pneumonia, or be killed in an accident, and no suspicion of the kidney condition may have been entertained, an absence of symptoms leading to it being overlooked.

Both kidneys are usually affected, although the degree of involvement may be greater in one than in the other. Sometimes other organs are also involved in the cystic degeneration, as in my own case No. 2, where cysts were found in the liver, pancreas, breasts and endometrium. Associated hereditary anomalies have been recorded, as myopia in many members of the East London family reported by Cairns.

Pathology.—"The polycystic condition of the kidneys is produced by the failure of the uriniferous tubules to unite with the collecting tubules. The development of subsequent secretory activity of unconnected tubules leads to their cystic degeneration" (Jordan and Kindred[4]).

Signs and symptoms.—As long as the remaining kidney substance is adequate to maintain life the cysts may give rise to no symptoms. When, however, the atrophy of the intermediate substance exceeds a certain limit, uræmic symptoms appear. Signs and symptoms which may occur are as follows: (*a*) bilateral tumours in the renal regions; (*b*) hæmaturia, recurring at intervals; (*c*) pain of varying character; (*d*) a sense of weight in the loins; (*e*) frequency of urination; (*f*) gastric disturbance; (*g*) anæmia; (*h*) uræmia.

The following graph illustrates the hereditary factor in the three cases which came under my observation.



Genealogical graph of the three cases of polycystic kidneys.

The histories are as follows:

CASE 1

Mrs. X., aged 43, twin sister of Mrs. N., predeceased her sister; the cause of death was polycystic disease of the kidneys. These women were probably identical twins. A rather extensive survey of the literature on polycystic kidneys has brought to light only two other reports of the disease occurring in identical twins. Although such instances may have been recorded they must have been relatively rare. The occurrence in identical twins of this anomaly is one more link in the chain of evidence pointing to heredity as the etiological factor.

CASE 2

Mrs. A.N., white, aged 51, was admitted to Victoria Hospital on February 3, 1928, and died on February 7, 1928.

Complaints.—A mass in the abdomen; vomiting; loss of weight; constipation; menorrhagia.

History.—The patient first noticed the mass in the abdomen about three months before. Since then it had increased in size. She had pain just below and to

the right of the umbilicus. The bowels were markedly constipated. Blood had been noticed occasionally in the bowel movements. The appetite was poor. She had been vomiting frequently for the past three months and the vomitus was foul. The menstrual periods were still present, but were becoming irregular. She was flowing at the time of admission and also one week previously. The discharge was foul. The patient had had two children. Some years previously she had passed an examination for life insurance; the tumour mass apparently was not recognized or was not recognizable at that date.

Physical examination.—Temperature 97°; pulse 108; respirations 24. She was emaciated but not acutely ill, although she appeared to be in some discomfort. The skin was normal. A mass was visible in the right lower quadrant of the abdomen. This was not very rough and was not movable. It did not seem to rise out of the pelvis. Some tenderness was present in the lower epigastric region. The external genitalia were apparently normal.

Laboratory findings. — Urinalysis showed: specific gravity, 1010; reaction, neutral; albumin, ++; sugar, negative; casts, negative; red cells, negative; pus cells, numerous.

Blood examination.—Creatinine (February 6, 1928), 8.5 mg.; non-protein nitrogen, 240 mg.; hæmoglobin (February 3, 1928), 74; red cells, 4,352,000; colour-index, 0.85; leucocytes, 10,400.

Differential count.—Small lymphocytes, 10; large lymphocytes, 5; neutrophiles, 85; red cells, normal.

Course of illness.—February 3, 1928.—Admitted on a stretcher. February 5.—Condition not so good. Respirations laboured, but the rate was not increased. February 6.—Decidedly worse. The breathing was laboured; nothing was found in the chest. Had anuria, was uræmic and comatose. February 7.—The patient had been growing weaker all day; was comatose, with Cheyne-Stokes breathing. No cyanosis. No wrist pulsations at 5 p.m., but the heart was beating slowly. Some moisture present at the base of the lungs. Died at 5.35 p.m.

Autopsy.—Only the findings relative to cystic degeneration are included in this report.

There was no increase in the quantity of peritoneal fluid. The greater omentum was thin and covered the upper intestines, and appeared to fold downward over the cæcum, where it was slightly adherent to the gut over the appendix; this was retro-cæcal and coiled under the cæcum with a wide adhesion fixing the tip to the abdominal wall. On breaking down the adhesions at the cæcum, the omentum lifted from the viscera. Shining through the omentum an irregular mass was seen, which, when the bowel covering it was removed, proved to be a large kidney studded with thin-walled cysts full of clear fluid. The enlarged kidney filled the whole right side, extending upward under the liver. The ascending colon crossing its anterior surface was pulled away from the lateral abdominal wall and its mesentery was stretched. The left kidney was smaller, but showed a similar cystic condition, and the descending colon passed over its lateral anterior border about 2 inches from the abdominal wall. The spleen was fused to the upper pole of the left kidney and appeared to be of normal size. The liver was enlarged, extending one-half inch below the costal margin, and its anterior surface showed numerous cysts similar in appearance to those of the kidney.

Liver.—Weight 1689 gm. It contained numerous thin-walled clear cysts similar to those in the kidney. These were specially numerous over the upper contained surface. Section showed these cysts to be scattered more or less diffusely through the organ, but a considerable amount of liver tissue remained. It was reddish-brown in colour and had a slight nutmeg appearance. The gall bladder was slightly distended, contained no stones, and the duct was patent.

Kidneys.—The right weighed 1625 gm.; the left 960 gm. The parenchyma of both organs was apparently almost completely replaced by a multitude of cysts. When the fatty fibrous capsule was removed, which was accomplished quite readily, beautiful thin-walled cysts were revealed. The majority contained a clear, brownish fluid, but some showed an opalescent content, and others were quite black from a previous hæmorrhage into the cavity. The left kidney was sectioned longitudinally, and the right left intact. The cysts were found uniformly throughout the cut surface. When cut, the surface cysts collapsed and the fluid escaped. In those cysts containing a semi-solid whitish degenerative material the content still remained *in situ*. Signs of old and recent hæmorrhage could be seen in other cysts, as a tarry black, semi-solid residue, or as fairly normal recently clotted blood. The cysts varied in size from a few mm. to 25-50 mm. in diameter. In certain areas, especially near the hilum, bands of a spongy texture passed between the cysts, probably representing the functional kidney parenchyma. The ureters were slightly thickened, but the pelves did not appear dilated.

Microscopic examination.—Kidney.—The cysts were lined by epithelium varying from cuboidal to a delicate low type. They varied in size and contained an eosin-staining material. The convoluted tubules were distorted and in many places were replaced, as it were, by an overgrowth of fibrous tissue, with a definite infiltration of lymphocytes. The glomeruli, when present, appeared normal. A few of the convoluted tubules and small cysts contained an acute exudate of polymorphonuclears and fibrin. Pathological diagnosis.—Congenital cysts of the kidneys, with acute and chronic nephritis in kidney parenchyma.

Liver.—The large cysts were lined by an epithelium similar to that found in the cysts. The liver tissue adjacent to the cysts in many places was replaced by fibrous tissue and lymphocytes, the result of a chronic inflammation. Near the cysts the bile ducts were numerous, convoluted, and sometimes enlarged to the dimensions of a cyst, lined by high columnar epithelium. The liver cells showed a granular cytoplasm, with vacuolation and a yellowish-green pigment suggestive of early jaundice. Pathological diagnosis.—Congenital cysts of liver; chronic hepatitis; dilatation of the bile ducts; beginning fatty degeneration of the liver cells.

Pancreas.—The pancreatic parenchyma appeared normal. In places small irregular cysts were present, lined by high columnar epithelium, which appeared to suggest convolutions and distortions of the pancreatic ducts.

Uterus and cervix.—A similar distortion of cervical and uterine glands was present. Several cysts lined with a smooth cuboidal epithelium were noticed in the cervix. Below the endometrium the glands were irregularly dilated and enlarged, simulating the picture noticed in the pancreas.

Breast.—In certain areas the breast tissue looked fairly normal; in others numerous cysts were present, lined by several layers of low cuboidal epithelium.

CASE 3

R.N., aged 28, married, no children, was admitted to the Victoria Hospital on March 11, 1933, following an automobile accident, and died the next day.

Autopsy.—Right kidney (one pole).—"The specimen consists of a portion of the right kidney, measuring 8.5 by 6.5 by 3 cm., and a piece of blood clot and tissue, 4 by 3 by 2 cm. The kidney has adherent to it the capsule and in the region of the pelvis a large firm blood clot. The cortical surface presents numerous cysts, some of which are translucent and others yellowish white, the largest of these measures 1.5 cm. in diameter. On section there are numerous cysts, in some of which hæmorrhage is present. At each extremity there is a rupture of the kidney parenchyma. The kidney pelvis presents some free blood. Very little cortical tissue is left. On section some kidney tissue is present. The remainder of the right kidney, together with some adherent blood clot, presents a similar picture to that described above. The left kidney measures 14.5 by 7.5

by 5 cm. The surface is covered with many cysts as described above. On section many cystic spaces are seen. A few contain fluid blood, some a brownish granular substance, and one a yellowish grumous material.

Microscopic examination.—Right kidney shows large areas of fresh hæmorrhage which is extending deeply into the kidney tissue, causing considerable disorganization of structure. A great many of the tubules contain a bright eosin-staining homogeneous serum-like substance, and many others contain fresh blood. Numerous good-sized cysts are found in the cortex. These are lined by a single layer of flat compressed epithelium, and contain granular amorphous material. The left kidney is essentially similar to the right, but shows much less evidence of hæmorrhage and resulting disorganization of structure. It contains numerous cysts similar to those above described. The tubules show much degenerative change although this may be largely due to poor fixation. Pathological diagnosis.—Congenital polycystic kidneys (bilateral), with traumatic rupture (bilateral, but most marked in the right)''.

I desire to acknowledge my indebtedness to Drs. E. M. Watson, J. H. Fisher, M. T. Macklin, and W. S. Partridge.

SUMMARY

Polycystic disease of the kidneys is one of the rarer disorders which affect mankind. Approximately 1 in 5,000 persons admitted to the London Hospital suffered from this condition.

Its hereditary nature is shown in the different genealogical graphs, including my own. The incidence of polycystic disease of the kidneys, occurring in identical twins, seems to be exceedingly rare.

The hereditary factor is not sex-linked; an affected male or female may equally transmit the disease.

Absence of symptoms may cause the renal condition to remain unrecognized. Without careful clinical and physical inquiry, and post-mortem examinations the polycystic condition may be overlooked.

Both kidneys are usually affected.

Other organs may show polycystic degeneration as in my own case, No. 2, in which the liver, pancreas, endometrium and breasts were affected.

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REASONS WHY RADIATION OF THE LARYNX WITH RADIUM SHOULD PROVE MORE EFFECTUAL*

PRESENTATION OF A RADIUM LARYNGEAL APPLICATOR

BY ROBERT H. CRAIG, M.D., C.M., F.A.C.S., F.R.C.S.(C.),

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WE have heard much about Madame Curie in connection with radium and its discovery, but we must never forget the great pioneer work of Rutherford and Soddy. Their creative genius and profound knowledge of physics have made radium one of the most fascinating and illuminating studies of our day and generation.

Radium, in my humble opinion, occupies relatively the same position to the earth that the endocrine glands do to our bodies. The bombardment of the hormones of these glands regulates in a major way our mental and physical activities. Without radium the earth would be uninhabitable. Radium, which is concealed sunlight, in conjunction with the other great sources of heat, helps to maintain life. After all, science is for ever pointing the way of life; she has proved to our little groping minds that we are only the microcosm of the macrocosm—mere floating specks in time and space. He who runs may read.

Up to the time that I adopted electro-dessication and radium in the treatment of laryngeal carcinoma my results were anything but satisfactory; there were recurrences in from one to three years. During my twelve years' experience with radium in laryngology, my failures and successes have taught me certain principles which have proved to be invaluable. Due consideration was not given to the selection of cases, particularly in the beginning; this gave radium a ''black eye'' in many quarters. Also, men attempted this work who were not competent from a laryngological standpoint or from their knowledge of radium. Dosage and screen-

* A paper read before the Laryngological Section of the Montreal Medico-Chirurgical Society, Royal Victoria Hospital, October, 1933.

age were not measured with sufficient accuracy. Now, owing to the cooperation of laryngologist, radiologist and physicist, these all-important factors in treatment receive the attention so necessary for success. The inaccessibility of the sub-glottic space, with consequent difficulty of radiation, has been one of our *bêtes noires.*

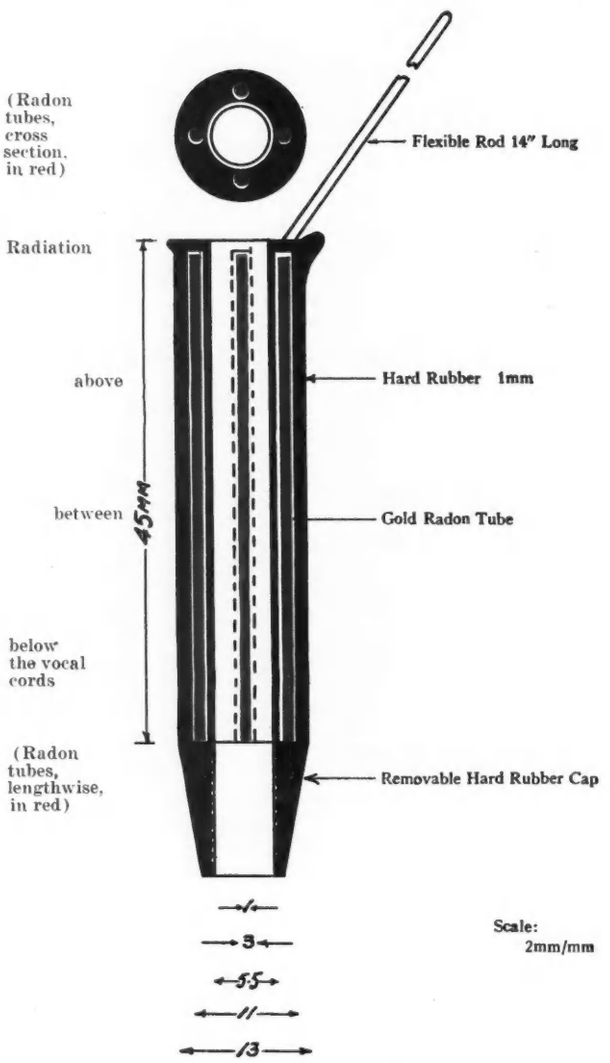
I have devised a tube for gamma radiation of the larynx, including the sub-glottic space, which I trust will give even radiation in this field. It is patterned after O'Dwyer's intubation tube.

The intubation method seems to me the next step forward in the treatment of laryngeal carcinoma. With accurate dosage and screenage is it too much to hope that the results obtained will compare favourably with the remarkable results achieved with radium in the treatment of cancer of the cervix?

The advantages of intra-laryngeal radiation are obvious. The vast majority of cases of early carcinomata are, as we all know, limited to the anterior half of the larynx. When recurrence does take place after radiation or surgical treatment, the sub-glottic space is usually the first to become involved. The necessity, therefore, of even gamma radiation in this region is apparent. Treatment by this method should avoid the necessity of tracheotomy and laryngo-fissure. The restoration of the voice, providing screenage and dosage have been accurately measured, is almost a certainty. The intractable cases which fail to respond to these measures can be supplemented by electrocoagulation and, if further interference is necessary, laryngo-fissure or laryngectomy can be resorted to. In my opinion conservative treatment should be given a trial before subjecting the patient to more radical measures. The insertion of the tube can be done under local or general anæsthesia. Personally I prefer avertin, as the patient remains quiet during the introduction of the tube and the radiation of the larynx.

Three to four hundred milligram hours of deep gamma radiation with the tube, supplemented by the insertion of gold radon seeds in the involved area if the growth is extensive, will give sufficient crossfire radiation for one treatment. This can be repeated in four to five weeks if necessary, the dosage depending upon conditions. Too heavy a dosage will bring about destruction of the cartilage.

Although these cases require great patience and perseverance on the part of the surgeon, the results obtained are well worth the effort. During treatment the general health of the patient must be maintained at as high a level as possible; ample sunlight, supplemented by the alpine lamp if necessary, a carefully considered diet, with due attention to elimination, will pre-



SKIN ERYTHEMA DOSES GIVEN WITH THE CRAIG LARYNGEAL APPLICATOR

200	mcs.	applied	for	1	hour	gives	1	S.E.D.	
50	"	"	"	4	hours	"	1	"	
60	"	"	"	6	"	"	1.8	"	
60	"	"	"	8	"	"	2.4	"	
100	"	"	"	4	"	"	2	"	
100	"	"	"	6	"	"	2.9	"	
100	"	"	"	8	"	"	3.9	"	
100	"	"	"	24	"	"	11.1	"	*

* The above figures are for adjacent tissues which will receive the minimum radiation, assuming that the applicator will be left in one position (not rotated). *Should applicator be movable, 170 mc. hrs. is one S.E.D. Therefore multiply all figures in "S.E.D." column by 1.18.*

vent auto-intoxication with its attendant evils. This feature has been stressed by Continental observers, particularly by Prof. Pierre Delbet, Superintendent of the Cancer Institute, Hôpital Cochin, Paris. The *Stockholm Weekly Journal*, in June, 1931, published a most interesting article by Professor Delbet, entitled: "Take magnesium and escape cancer," in which he advocated, as a prophylactic measure, the administration of magnesium to all persons in and past middle life. By his experimental work he showed that soil, water and foodstuffs, deficient in magnesium salts, predisposed to cancer. Delbet, in order to check up his gross findings, inoculated a series of rabbits with cancer virus. Fifty per cent of these he treated with magnesium chloride. All of those treated with magnesium chloride recovered, most of the untreated cases died. Just as chaulmoogra oil is almost a specific when administered in early cases of leprosy, so magnesium salts in the form of sulphate or chloride, may be one of the major keys in the control and eradication of cancer.

The presentation of this tube would not be complete without reference to the invaluable assistance of Dr. G. Allen Robinson and The Radon Company, Inc., 1 East 42nd St., New York, whose cooperation made it possible and from whom it may be obtained.

TUBERCULOUS PERITONITIS*

(A REPORT OF 21 CASES TREATED AT ST. MICHAEL'S HOSPITAL DURING THE PAST FIVE YEARS)

BY HARRIS McPHEDRAN, M.B. (TOR.), F.R.C.P.(C.) AND GEORGE PEACOCK, M.D. (TOR.),

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TUBERCULOUS peritonitis is for the most part a chronic inflammatory process involving the peritoneum, and secondary usually to tuberculosis elsewhere in the body. While it may occur at any period of life, it is most frequent between 20 and 40 years of age. Post-mortem records show that it is more frequent in males. This may depend partly on the greater frequency with which post-mortems are done on males, and also, perhaps, on the success which attends removal of foci in the female by extirpation of the Fallopian tubes, which are frequently a starting point for the peritoneal infection. Faulkner and Everett[1] report that in 45 per cent of their cases, tuberculosis of the tubes was proved to be present. Osler[2] reported 21 of his own cases, of which 15 were in males and 7 in females, but he stated that the disease is more common in females, and from the combined figures of Boulland, Hane and Mourange and his own found a total of 60 males and 131 females.

Cirrhosis of the liver shows a decided tendency to become complicated by peritoneal tuberculosis.

Pregnancy is held to have a definite causal relationship to tuberculous peritonitis. H. Kelly[3] states in 28 per cent of his cases the illness dated from childbirth or miscarriage. More recently, Faulkner and Everett[4] report that 14.5 per cent of their cases occurred during, or followed in a short time after the termination of, a pregnancy. In 6 of the 27 pregnancy cases, miscarriage took place.

TABLE I

SUMMARY OF CASES AT ST. MICHAEL'S HOSPITAL DURING YEARS 1928–1932

No.	*Sex*	*Total Admissions 1928-1932 Inclusive*	*Incidence of Tuberculous Peritonitis*	*Occupation*
21	Male 5 Female 16	41,300	21 out of 41,300 admissions, or 0.0508 per cent, or 50.8 per 100,000	Labourers .. 2 Nurses in training .. 3 Housewives . 3 Delivery boy 1 Stenographer 1 Store clerk . 1 Others 9

Tuberculous peritonitis is generally conceded to be almost invariably secondary to a tuberculous focus elsewhere. This primary focus may be in the intestines, in the lymphatic glands, or in the lungs. Faulkner and Everett[6] say, "The longer one works over the records of this group of patients with peritoneal and pelvic tuberculosis, the more does it seem likely that most of these patients may fairly definitely be considered as having had an original pulmonary focus from which all their troubles began. This is just an impression one gains from observing the frequency with which an anæsthetic stirs

* One of a series of lectures on Diseases of the Alimentary Tract read before the Academy of Medicine, Toronto, on January 6, 1933.

up an acute pleurisy, and the greater frequency with which active or old pulmonary disease is demonstrated in the most recent cases, especially since the use of the roentgen-ray as a diagnostic adjunct.'' In three of the cases reported in their series they were able to find no evidence of intra-pulmonary infection by the use of the x-ray. This, however, does not exclude tuberculous glands around the hilus of the lung. A large percentage of women with tuberculous peritonitis have been shown to have tuberculous salpingitis as a focus. The route by which tubercle bacilli reach the Fallopian tubes is not clear.

Bacteriology.—The bovine form of tubercle bacillus was found by the English Commission of tuberculosis in 48 and by the German Commission in 63 per cent of the cases of abdominal tuberculosis investigated.[5]

Pathology.—The pathological appearance of the peritoneum varies as the disease is acute or chronic.

The acute form may be part of a generalized miliary tuberculosis or miliary tuberculosis of the cæcum simulating an acute appendicitis. Here the tubercles vary in size from that of a millet seed downward, are scattered over both layers of the peritoneum, mesenteries and omentum, and are often more numerous over the diaphragm.

In the chronic forms, the tubercles are larger and fibrotic, the peritoneum is thickened and the naked-eye appearances may exactly imitate malignant disease. The omentum becomes rolled-up into a hard mass, and the mesentery is shortened from cicatricial contraction so that the intestines become tethered to the spinal column. For purposes of clinical description, the chronic cases are classified as follows:— (1) the ascitic; (2) the loculated, encysted or fibroplastic variety; and (3) the chronic fibroid. adhesive or obliterative form. The difference between these different forms depends largely on the varying combinations of the amount of fluid and the extent and distribution of the adhesions that are present.

In the ascitic form, tubercles are scattered profusely all over the peritoneum. The more acute the disease, the smaller are the tubercles; the more chronic the disease, the larger are the tubercles. Considerable exudate develops in this form and is free in the peritoneal cavity.

The loculated or encysted form may be (a) suppurative or ulcerated, or (b) ascitic.

(a) In the suppurative or ulcerated form the intestines are matted together by adhesions and enclose collections of serofibrinous, turbid, or purulent exudation. In this form the tubercles increase in size, become confluent masses of caseous material surrounded by fibrin and adhesions, and by softening give rise to suppurating foci among the adherent coils of intestine. There may thus be numbers of intraperitoneal abscesses, the pus of which may erode the walls of the intestine and eventually lead to perforation. As the result of a perforation, a fæcal fistula may form at the umbilicus. The bowel is easily torn in attempts to unravel the intestines. Adhesions unite all the viscera; mesenteric glands are enlarged and caseous, and may soften and give rise to a localized abscess.

(b) In the ascitic form of loculated peritonitis there is a transition between the purely ascitic type with free fluid and the obliterative or chronic adhesive type. The obliterative form may follow the cure of the ascitic form or develop subacutely. The matted intestines, rolled-up omentum, and masses of caseous glands embedded in adhesions give rise to the tumour-like masses felt through the abdominal wall.

Symptoms.—Symptoms vary according to the anatomical lesions present. In general miliary tuberculosis the infection of the peritoneum may be latent, with no effusion. The disease is frequently not suspected during life. This accounts in part for the discrepancy between the relative percentages of tuberculous peritonitis found during life and post mortem by some writers. In general it may be stated that abdominal pain or pelvic pain in the female which is worse at the menstrual period, low-grade fever, exhaustion toward evening, loss of weight, poor appetite, accompanied or followed by abdominal swelling with free fluid in the abdomen, constitute a syndrome which should strongly arouse the physician's suspicion of tuberculous peritonitis, especially if these symptoms occur in patients 20 and 40 years of age in whom there is a history of pleurisy or other evidence of pulmonary infection.

The variation in the signs present is accounted for by the varying and relative amount of fluid and adhesions. In the *ascitic* form in which miliary tubercles are scattered over the peritoneum, the characteristic feature is the effusion,

which is free and gives the signs on examination associated with that condition. The amount is usually not extreme, unless associated with hepatic cirrhosis. The abdomen is tender on pressure. The fluid may be clear, turbid or blood-stained, and the contained cells are mainly lymphocytes. Injection of the fluid into a guinea pig may produce tuberculosis.

In the purely *fibroid* type, we go from complete absence of symptoms to those of intestinal obstruction. The physical signs will depend on whether the abdomen is thin and scaphoid or distended by gas in the intestines. Palpation of the abdomen will give varying signs according to the above conditions. It is in this form that the matted intestines, rolled-up omentum, and masses of caseous glands, give rise to the tumour-like masses felt through the abdominal wall.

Encysted tuberculous peritonitis gives a combination of signs of the two forms just described. The abdomen gradually becomes more and more distended. Large walled-off quantities of fluid may in the female simulate an ovarian cyst. The abdomen feels doughy and tumour-like masses may be palpated through the abdominal wall. The thickened omentum forms a characteristic hard cord running transversely across the upper part of the abdomen. In advanced cases the umbilicus may become indurated and inflamed from an abscess pointing there. Percussion and palpation are painful and show irregular areas of resonance and dullness. Rectal or vaginal examination may reveal the presence of tumours, matted coils of intestines and salpingitis.

The blood may show a moderate secondary anæmia. Leukocytosis occurs in a certain number of cases, but is due to some complication or secondary infection. In eleven cases there is no mention of leucocytosis. The leucocytes ranged from 8,400 to 17,200.

The urine usually shows nothing abnormal except a slight trace of albumin.

DIAGNOSIS

A complete history and physical examination (including a pelvic examination in the female), together with roentgenograms of the lungs, usually leave no doubt as to the diagnosis. One should stress (*a*) pain and soreness over the abdomen; (*b*) low-grade or moderate fever, normal in the morning, and slightly or moderately raised at night; (*c*) failing health with loss of weight over a period of time, varying from one to several months; (*d*) evidence of gradually accumulating fluid and of tuberculous foci in the lungs or elsewhere.

PROGNOSIS

This varies according to the type of the disease. It is best in the discrete miliary form with ascites, and worst in the form with numerous localized foci and purulent exudation; it is hopeless in a patient suffering from generalized

TABLE II

SUMMARY OF COMPLAINTS, PHYSICAL FINDINGS, AND OTHER EXAMINATIONS AT ST. MICHAEL'S HOSPITAL

Summary of Complaints in 21 cases	*Summary of Physical and Other Examinations*					
Per cent Pain, tenderness, soreness..... 76 Abdominal swelling..... 42 Flatulence and belching..... 33 Cough..... 29 Loss of appetite.. 28 Vomiting..... 24 Exhaustion..... 19 Loss of weight... 14 Expectoration.... 9 Other symptoms: Epistaxis, headache, hæmoptysis, fever and chills, glandular swelling, blood in stool, diarrhœa and constipation.	*Abdomen*	*Chest*	*Pelvis*	*L. Glands*	*White Blood Cells*	*X-Ray Chest*
	Per cent Tenderness. 43 Distention,. 38 Free fluid.. 24 Doughy feel, 2 cases. Abdominal mass, 2 cases. Abdomen negative on examination, but peritonitis found post-mortem in 2 cases.	Negative in 6 cases. Positive for T. B. in 6 cases. (*a*) Moderate, 3 cases. (*b*) Advanced, 2 cases. (*c*) Pleural effusion, 1 case. No report, 9 cases.	Not examined in 16 cases. *Positive* in 4 cases. 1st. Tender in both fornices. 2nd. Enlarged uterus: mass in each fornix. 3rd. Tender both sides of rectum. 4th. Mass on left fornix. *Negative*, 1 case.	Generally enlarged in 1 case and found to be T.B. Glands.	Ranged from 8,400 to 17,200 per cu. mm. *Ascitic fluid in 3 cases.* Gross: 1 bloody, 1 turbid, 1 amber. Microscopic: Lymphocytes, 3 R.B.C., 2 T.B., 0 Guinea pig Inoculation, 2 Positive, 1 Negative, 1	No x-rays in 10 cases. Negative in 5. Positive in 4. Suggestive in 2. Negative at first, but positive 6 months later, 3.

miliary tuberculosis. In estimating the outlook in individual cases, features that might be considered favourable are (1) a history of short duration; (2) moderate or low-grade fever; (3) good general nutrition; (4) absence of tuberculosis elsewhere, as in the lungs and intestines; (5) the ascitic form of this disease. The features that give an unfavourable prognosis are (1) an acute onset with high fever; (2) evidence of wide-spread tuberculosis; (3) poor general nutrition; (4) the encysted type of tuberculous peritonitis, especially of the suppurative form. Some writers hold the disease to be curable in 50 per cent of the cases, while others take a more pessimistic view.

Recurrences occur in a certain number of cases. This probably depends on the presence of some source of reinfection in the abdominal cavity such as the intestines, lymphatic glands, vermiform appendix, or the Fallopian tubes. The importance of removing such foci wherever possible has been amply proved.

The following case report shows several important features especially the insidious onset, prolonged course, and recurrences.

M.M., aged 32, had scarlet fever and pneumonia as a child. She started training as a nurse in October, 1924, and had an appendectomy for acute non-tuberculous appendicitis in November, 1924. After return to duty at the end of January, 1925, she developed erythema nodosum and when the attack subsided tonsillectomy was performed. She went home for further convalescence in March, 1925, but did not regain her health and in May tuberculous peritonitis was definitely diagnosed. Recovery seemed not complete till the Spring of 1926, when she was allowed out of bed. She did not return to duty at the hospital until January, 1928.

A second attack of tuberculous peritonitis developed in May, 1928, and recovery again seemed complete in June, 1929, the interval having been spent in bed. From then on she kept well and worked at home in the country till the summer of 1932.

A third attack then became evident with moderate fever and abdominal tenderness with fluid. She was afebrile at the end of 2 months. At the end of 4 months from the onset of this last attack her appearance was healthy; her weight had increased by 20 lbs. but there were (1) slight frequency and pain on urination; (2) slight soreness on palpation; (3) some pain on defæcation; (4) soreness of the abdomen on attempting to stand up straight; (5) a fixed uterus and tenderness in the left fornix. A laparotomy was undertaken in the hope of finding a removable focus of infection, but extensive adhesions prevented any search for such. In spite of her favourable condition tubercles were found scattered all over the peritoneum which was greatly thickened. The bladder was drawn half-way up to the umbilicus.

It is of especial interest in this case to note that while the patient was afebrile and in good general health, the peritonitis was found at operation to be very extensive and still active. As a pre-operative warning that trouble was still present we should like to emphasize (1) soreness over the abdomen on palpation or on attempting to straighten up as in standing or walking; (2) slight frequency on urination; (3) pain on defæcation; (4) and fixation of the uterus on pelvic examination. The discrepancy between the pre-operative findings and the extensive pathological changes disclosed at operation was very striking. It impressed on one the great necessity of prolonged treatment and caution in prognosis in the face of an apparently favourable course of the disease.

TREATMENT

Treatment should include any procedure that will help to restore the unfortunate patient to health. There should be no such classification as medical or surgical treatment. In general, one may say that the treatment is that of tuberculosis elsewhere in the body, namely, rest in bed, judicious feeding, fresh air, exposure to sunshine or sun lamp in those cases past the acute stage and showing no activity in the lungs. *The patients should be under treatment in bed for at least 3 months.* A very difficult question to decide is when to let them out of bed. Several indications for such a procedure are essential. (1) The patients should be afebrile. Slight rises of temperature in the late afternoon or evening, to 99.1° or 99.2° F., point to an active process. The case reported, however, shows that there may be extensive disease without any rise in temperature. (2) All fluid should have disappeared from the abdomen and pleural cavities. (3) All soreness should have gone from the abdomen on palpation, on standing up, and on pelvic examination. (4) There should be no pain on defæcation or urination. (5) Signs of good general health should be manifest in increased weight; good appetite; regular bowel movements, and refreshing sleep. The time out of bed should be very short at first and very gradually increased. Moving about will depend on the presence of the favourable indications noted above and complete absence of soreness on walking. Return to work should be by easy stages and should not be considered till the patient has had at least 6 months, and better still 1 year, free from the symptoms and signs of this disease. Active tuberculosis elsewhere may prolong the convalescence. The case reported emphasizes the need for prolonged ob-

servation, the chronicity of this disease, and the possibility of recurrences after long periods when complete cure seemed certain.

Whether or not one should employ surgical methods depends on the individual case. Many surgeons claim that simple laparotomy in the ascitic type is beneficial. On the other hand we know that this type does well without any surgical interference. As in pleurisy with effusion, the fluid disappears in from one month to six weeks if the patient is left alone. Operative procedures will have to be undertaken where there is an intestinal obstruction, or where it is thought there are foci of infection as in the appendix or Fallopian tubes. These should if possible, be removed when diseased. Massive adhesions in the plastic type may, however, prevent this, and one has to trust to the *vis medicatrix naturæ*. It is interesting to note that some of those who recovered from the serofibrinous type of this disease show when operated on for some other reason, years later, no evidence of the disease.

Of the 21 cases treated in St. Michael's Hospital, 6 were operated upon. The findings at operation were as follows: (a) free fluid—3 times; (b) tubercle—4 times; (c) adhesions—4 times; (d) thickened bowel—once; (e) calcareous deposit—once; (f) appendicitis, with tip broken off—once.

Three of the total number treated died while in hospital, but none of these had been operated upon. The stay in hospital varied from a minimum of 3 days to a maximum of 352 days, with an average of 79 days.

The immediate results of treatment in hospital were as follows: improved—15 cases; cured—1 case; died—3 cases (14 per cent); unimproved—2 cases.

Five cases only have been traced since they left hospital. Three of these have remained well. One has had a tube and ovary removed since leaving hospital, and one other has developed a lymphadenitis of the cervical glands.

CONCLUSION

In conclusion the following features of this disease should be emphasized.

1. That tuberculous peritonitis is very frequently associated with tuberculosis and is probably secondary to tuberculosis elsewhere in the body.
2. That it is a serious illness.
3. That the time required for complete recovery is uncertain and prolonged.
4. That in the female involvement of the Fallopian tubes is frequently found, and this necessitates careful pelvic examinations, and, where disease is discovered, salpingectomy if possible.

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RADIATION IN CARCINOMA OF THE CERVIX UTERI*

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WE are presenting herewith a survey of the cases of primary carcinoma of the cervix treated at the Memorial Hospital during the years 1925 and 1926. During these two years 227 cases of primary cervical cancer were seen in the Memorial Hospital clinic. This represents all groups, and includes all cases, even the most advanced, in some of which even an attempt at palliation was known to be useless. In 1925, 118 cases were seen and in 1926, 109.

The ages of the patients ranged from 26 years to 79 years, with the greater number occurring in the two decades from 40 to 60 years. Of the total there were 8 cases between 20 and 30 years of age, 46 from 31 to 40 years inclusive, 81 from 41 to 50 years, 69 from 51 to 60 years, 16 from 61 to 70, and 7 cases over 70 years. It is interesting to note that one of the youngest, a woman 26 years of age, is still alive and clinically free from disease 6 years after treatment. The oldest, a woman of 79 years, lived 21 months after treatment and died of heart disease, at which time she was free of any clinical evidence of carcinoma. The significant fact is that car-

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cinoma of the cervix, while essentially a disease of middle and later life, occurs frequently enough in young adult women to be constantly borne in mind.

The duration of symptoms before the patient sought medical advice varied greatly. One woman was seen in clinic 10 days after her first symptom, which was metrorrhagia, appeared. Others apparently had symptoms existing as long as two to three years. The average patient had symptoms for from three to six months. It is significant that many patients reporting within a short time after the appearance of symptoms already had advanced disease. One, seen two weeks after she first noticed vaginal spotting, was already a hopelessly advanced case and died within fourteen months. The three main symptoms complained of were vaginal bleeding, vaginal discharge and pelvic pain. About 60 per cent complained of bleeding, and 20 per cent of each of the other symptoms. Of the total number, 218, or 96 per cent, had been married, of whom 91.6 per cent had either given birth to full term children, or had had one or more miscarriages. Nine cases occurred in single women in whom there was no history of predisposing injury, infection, or pregnancy.

As to racial susceptibility, we have been impressed by the number of Italian women seen in our clinic with the disease. A survey shows that 15 per cent of the total number occurred in women born in Italy. Hebrews were seen but rarely.

It was the practice on the gynæcological service at the Memorial Hospital in 1925 and 1926 to classify clinically the cases into three groups, *early, borderline* and *advanced.* The early cases included all those in which the disease was confined to the portio vaginalis of the cervix, even though there was considerable infiltration of the cervix itself. The borderline group included those cases in which the cervix and some adjacent structure, such as the vaginal vault, were involved, but where fair mobility of the uterus remained. The advanced cases included all the others, that is, those in which there was definite and palpable parametrial involvement. As may be imagined, with two or three men examining the cases, some variation in opinion was possible as to which group a given case belonged. A survey of the groups would indicate that such errors of clinical grouping as were made were errors of optimism, and frequently so-called favourable cases should have been classified as advanced. At the present time the very advanced or hopeless cases are placed in a fourth group called the *palliative group.*

In 1925, out of a total of 118 cases, 15, or 11.8 per cent, were early; 9, or 7.6 per cent, were borderline; and 94, or 80.6 per cent, were advanced, many of which were suitable only for palliation. In 1926 there were 109 cases; 12, or 11 per cent, were early; 8, or 7.3 per cent, were borderline; and 89 or 81.7 per cent were in various stages of advanced disease (Table I). The cure rate in each group surviving 5 years or more after treatment is as follows:

TABLE I

1925

Clinical Group	*No. of Cases*	*Percentage of Total*	*No. alive*	*Percentage surviving 5 or more years*
Early.....	15	11.8	8	53.3
Borderline.	9	7.6	4	44.4
Advanced .	94	80.6	10	10.6
Total...	118	100.0	22	18.6

1926

Early.....	12	11.0	6	50.0
Borderline.	8	7.3	4	50.0
Advanced .	89	81.7	10	11.2
Total	109	100.0	20	18.3

1925—15 early cases—8 living—53.3 per cent.
9 borderline cases—4 living—44.4 per cent.
94 advanced cases—10 living—10.6 per cent.
1926—12 early cases—6 living—50 per cent.
8 borderline cases—4 living—50 per cent.
89 advanced cases—10 living—11.2 per cent.

It is interesting to note how closely the end results agree in the corresponding groups of the different years.

All cases in this series have been proven by biopsy. In the 227 cases there are 27 sections which the pathologist has called carcinoma, but on which he has been unwilling to commit himself as the histological type, because the biopsy specimens were not satisfactory, having been obtained in practically every instance from the surface of a very advanced, degenerating tumour. Only one of these patients survived for 5 years. In the remaining 200 cases epidermoid carcinoma was the diagnosis in 190. The remaining 10 were adenocarcinoma. We have been unable to rule out the probability of primary

corpus carcinoma, with the cervix secondarily involved, in 4 of these, leaving therefore 6 cases, or 3 per cent proven primary cervical lesions of the adenocarcinoma type (Table II). This corresponds closely to the findings of Healy,[1] who in a survey of 1,574 cervix cases found a total of 2.7 per cent adenocarcinoma.

For a number of years, since Broder,[2] Ewing[3] and others demonstrated the relationship between variations in histological structure and the degree of malignancy of certain tumours, an attempt has been made to classify the lesions according to these variations. This has been done in this series by several different pathologists. We are indebted to Dr. Fred W. Stewart, of the pathological department, for reviewing and grading all the 1925 cases. The 1926 cases were graded as a routine during that year by various members of the pathological staff.

TABLE II

1925

Clinical Group	*No.*	*Epidermoid Car. Gr. I.*	*Epidermoid Car. Gr. II.*	*Epidermoid Car. Gr. III.*	*Adenocar.*	*Ungraded*
Early.....	15	3	11	0	1	0
Borderline.	9	1	7	0	0	1
Advanced .	94	14	53	9	2	16
Total	118	18	71	9	3	17
Percentage		15.3	60.17	7.61	2.54	14.4

1926

Early.....	12	2	6	4	0	0
Borderline.	8	2	4	0	1	1
Advanced .	89	5	47	22	6	9
Total	109	9	57	26	7	10
Percentage		8.35	52.3	23.8	6.4	9.1

The epidermoid carcinomas have been divided into three grades. Grade I represents the fully developed adult type of lesion, slow to metastasize, and most resistant to radiation. In 1925 there were 18 cases in this grade I group, representing 15.35 per cent of the total. Grade II, or the so-called plexiform group, represents the group much less adult in structure than grade I, showing more mitotic figures and in degree of malignancy standing between grade I and the most embryonal type, the anaplastic or grade III. Grade II represents the largest histological group; there were 71 cases in it, representing 60.17 per cent of the total number.

The most highly malignant group, having the most anaplastic cell structure, is grade III. There were 9 cases in this, representing 7.61 per cent of the total; 3 adenocarcinomas, or 2.54 per cent of the total; and 17 cases, or 14.4 per cent, ungraded.

In 1926 in grade I there were 9 cases, or 8.25 per cent; 57 cases in grade II, or 52.3 per cent; 26 cases in grade III, or 23.8 per cent. There were 7 adenocarcinomas, or 6.4 per cent, and 10 cases, or 9.1 per cent, were ungraded (Tables III and IV).

There is a wide variation in these groups in the two years. The pathological grading was done, as we have said, by different pathologists in each year. In the 1926 cases there was a tendency to consider that more cases fitted into grade III and fewer into grades I and II than is our experience at present. Since the 1925 cases were graded by Dr. Stewart, they no doubt more closely represent our present view and give a more representative picture than the 1926 series. In any event, it clearly indicates that the majority of the cases continue to fit into the grade II group and therefore tend to be rather

TABLE III

1925

SHOWING THE RELATION BETWEEN HISTOLOGICAL STRUCTURE AND END RESULTS

EARLY CASES

Pathological Group	*No.*	*No. living 5 or more years*	*Per cent alive 5 or more years*
Grade I.....	3	2	66.6
Grade II.....	11	5	45.4
Grade III.....	0	0	0.
Adenocar.....	1	1	100.0
Ungraded.....	0	0	0.

BORDERLINE CASES

Grade I.....	1	1	100.0
Grade II.....	7	3	42.
Grade III.....	0	0	0.
Adenocar.....	0	0	0.
Ungraded.....	1	0	0.

ADVANCED CASES

Grade I.....	14	2	14.28
Grade II.....	53	6	11.3
Grade III.....	9	0	0.
Adenocar.....	2	1	50.0
Ungraded.....	16	0	0.

radiation-sensitive. Tables III and IV show the results obtained in the grade II group in the favourable cases. The salvage in this group from advanced cases is about the average salvage from advanced cases in all groups combined. Of the grade III group there were only 4 cases in the favourable, early and borderline groups in both years combined—1, or 25 per cent, lived 5 years or longer. There were 30

TABLE IV

1926

SHOWING THE RELATION BETWEEN HISTOLOGICAL STRUCTURE AND END RESULTS

EARLY CASES

Pathological Group	*No.*	*No. living 5 or more years*	*Per cent alive 5 or more years*
Grade I.....	2	0	0.0
Grade II.....	6	5	83.3
Grade III.....	4	1	25.0
Adenocar.....	0	0	0.0
Ungraded.....	0	0	0.0

BORDERLINE CASES

Grade I.....	2	0	0.0
Grade II.....	4	2	50.0
Grade III.....	0	0	0.0
Adenocar.....	1	1	100.0
Ungraded.....	1	1	100.0

ADVANCED CASES

Grade I.....	5	1	20.0
Grade II.....	49	5	10.0
Grade III.....	21	3	14.0
Adenocar.....	5	1	20.0
Ungraded.....	9	0	0.0

grade III cases in both years in the advanced or palliation group, and of these 3, or 10 per cent, lived 5 years or more. We have failed, therefore, in this survey to demonstrate the extreme radiation sensitivity of this grade III group that was so well demonstrated in 1928 by Healy and Cutler.[4]

It is interesting to note that the prognosis in adenocarcinoma of the cervix, including those in which there was a possibility of primary corpus carcinoma, is relatively good. There was a total of 10 cases of which 4, or 40.0 per cent, lived 5 or more years. The total salvage therefore in the two years combined is:—

Early cases, 27—alive 14—51.65 per cent.
Borderline cases, 17—alive 8—47.20 per cent.
Advanced and palliation cases, 183—alive 20—10.90 per cent.
The total salvage of all cases 18.50 per cent.

We regard this as a low total salvage and feel that in general it should not be under 20 per cent.

Methods of treatment varied in the two years surveyed, and differed from the procedure employed at present. In 1925 treatment with radium was instituted as soon after the patient reported as was possible. Usually a vaginal applicator in the form of the "bomb" was used against the cervix for 1000 millicurie-hours, and in each lateral fornix for a similar dose, making a total vaginal application of 3000 millicurie-hours. Within a day or so following this treatment the patient was taken to the operating room, and under gas-anæsthesia a radon tandem of two capsules was inserted into the cervical canal. The dose with this tandem was usually 3000 millicurie- hours, and the relative strength of the capsules was 2:1, so that the cervix received 2000 millicurie- hours and the corpus 1000 millicurie-hours. Unfiltered glass radon seeds or implants were used for interstitial radiation, and were inserted into the lesion at the same time as the cervix tandem. These were inserted by means of needles into the substance of the cervix, the dose depending upon the bulk of the lesion, usually ranging from 1000 to 3000 millicurie-hours.

Roentgen-ray therapy, in the form of a pelvic cycle, in most cases was used as a supplementary or follow-up treatment, usually within 2 or 3 months, the long interval being due to the prostration following the radium treatment.

During 1926 the general method of treatment was the same. However, during this year gold filtered radon seeds were used in place of the glass seeds, giving only the more penetrating "gamma" radiation instead of the caustic "beta" radiation that was obtained with the glass seeds. The dose of interstitial radiation again depended upon the bulk of the lesion; x-ray was still used as a supplementary treatment and was given usually within two months.

During 1925 roentgen-ray therapy in most cases was carried out with the so-called low-voltage machine, of 145 kilovolts. During 1926 intermediate and high voltage treatment was used, the voltage being either 175 or 198 kilovolts. X-ray therapy has a very important place in our present regime, and all cases, except the most favourable early cases, now receive a pelvic cycle of four high voltage x-ray treatments before treatment with radium is carried

out. The result of this in some of these foul, fungating lesions is quite remarkable. In our plan of treatment we aim to give complete treatment with radium in a short period of time—two or three days, rather than in repeated smaller doses spread over several weeks. In this regard we find that in those cases that lived 5 years or more, radium was used as a re-treatment in but 4 cases in 1925, and in 3 cases in 1926, indicating that in the vast majority of cases the primary radium treatment was sufficient to destroy the lesion.

Among the complications of carcinoma of the cervix, more or less frequently seen, may be mentioned the following:— hæmorrhage, fistula, and metastasis to distant parts. Bleeding to some extent occurs in 60 per cent of all cases before they are seen in clinic. As an after-treatment complication, except for some staining following the vaginal manipulation, hæmorrhage was not common; it occurred in 17 cases in 1925 and in 7 cases in 1926. We believe that the use of unfiltered radon implants predisposed to hæmorrhage more than did the heavily filtered gold radon implants used in 1926. The formation of either vesico-vaginal or recto-vaginal fistulæ occurs in a certain number of cases as the result of the disease alone. We believe that fistula-formation is accelerated in some cases by the destructive action of radiation, especially when interstitial radiation is used. In the 1925 series, 7 vesico-vaginal fistulæ and 6 recto-vaginal fistulæ occurred; in the 1926 series, there were 4 vesico-vaginal and 5 recto-vaginal fistulæ.

The most common site for metastases to occur is the lumbar and deep pelvic chain of lymph glands. Œdema of one or both limbs sometimes occurs, due to the pressure of metastatic glands on the pelvic veins. Occasionally the pelvic bones and spine are involved in a metastatic process. In 2 cases in this series metastases occurred to ribs. In one case the patient died of symptoms suggesting cerebral metastasis. One patient is reported to have died three years and three months after treatment, of lymphatic leukemia; this, however, has not been verified.

SUMMARY

In this series of cases the five year end-results may be regarded as within the average range obtained by radiation therapy as carried out at that time (1925-1926).

The difficulties of histological grading are evident in the different percentages observed in the groups of the two years. The practical value of histological grading is still questionable, but we feel that it has a theoretical value, at least, when properly weighed with other factors, in establishing prognosis.

The number of clinically favourable cases was small, whereas the number of advanced and especially very advanced cases was high; 183 out of 227 cases were advanced.

We believe that the routine use of interstitial radiation with glass or gold filtered radon seeds as an important part of the primary treatment was a disadvantage and seriously handicapped the patient. It added greatly to the local and constitutional reaction in the advanced cases, and thereby delayed the giving of the roentgen-ray cycle. In the favourable cases we believe it tended to spread metastases by opening up lymphatics and blood vessels and pushing actively growing viable cancer cells into them. It increased the probability of infection, of hæmorrhage, and of fistula-formation, by causing rapid and extensive necrosis with sloughing of cancer tissues.

Many of the cases in this series were, in the light of our present knowledge, over-treated, because of the large amount of interstitial radiation given them. Despite the above disadvantages there was but one immediate death as a result of treatment, a primary mortality of 0.44 per cent.

The 11 per cent five year cure rate in the advanced and surgically incurable cases is encouraging, as these patients without radiation would no doubt have died within three years.

The discouraging feature of the report to all of us was the advanced stage reached by the disease before the patients sought medical advice. Unfortunately this condition of affairs, to a large extent, still holds true to-day.

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NASAL SINUSITIS AS IT PRESENTS ITSELF TO THE GENERAL PRACTITIONER*

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THE modern tendency to specialize has divided the practice of medicine into separate fields and perhaps no field has been more isolated than that of rhinology. The human body is not built in separate compartments but functions as one organic whole. Chronic disease in any part affects the whole body and only in acute conditions can we confine our attention to local symptoms with any hope of success. It is just as essential for the general practitioner to take into consideration nasal infection as a source of systemic disease as it is for the rhinologist to think of the influence of systemic disease on the nasal condition. Perhaps one who has struggled with these problems, first as a general practitioner and later as a rhinologist, is in a favourable position to coordinate these fields and in this paper we shall consider sinusitis as it presents itself to the general practitioner.

Sinusitis is now generally recognized as one of the sources of focal infection. One can better realize the relative importance of sinusitis in medicine to-day by contrasting its status a few years ago. Those of us who can look back twenty years or more to our college days will recall that we were taught thorough clinical methods in examining the abdomen and chest. Except for the more recent laboratory aids, our training there was quite adequate. When we got as far as the neck of our patient, however, our clinical teaching faded out. The nose with its dark passages and cavities was largely a land of mystery. To-day we cannot be content to leave off our general examination at the neck and simply hope that there is nothing above that disturbing our patient, for it is being generally recognized that a very large proportion of our office patients, the chronically unwell class, are suffering from upper-respiratory-tract infection. The vast number of people complaining of headache, neuralgia, neurasthenia and migraine, of chronic cough, bronchitis and asthma, of arthritis and so-called "rheumatism" are being studied as never before, and in a large proportion of these cases the original focus is being traced to the nose and throat. Is this merely a fad, or is it perhaps a tendency of the medical pendulum to swing to extremes? Let us consider the conditions.

In the nose are two mucosa-lined passages, each connected with a whole series of sinuses or cavities, often with inadequate ventilation and drainage. Through these passages or through the mouth must enter all the air we breathe. Now under our modern civilization, in a northern climate, we take thirty, forty, sometimes even fifty children, put them in one room for two hours or more at a time, raise the temperature to between seventy and eighty degrees, with the air so dry that it irritates not only the delicate mucous membranes but even the tough skin, add chalk dust, and then allow half a dozen children with acute coryza to cough germs around promiscuously. Can we wonder that nasal infections are prevalent? Then, given a chronic nasal infection with germ-laden discharge pouring out day and night, some being swallowed, some aspirated into the bronchi, the natural sequence would seem to be chronic systemic disease and toxæmia. Nasal infections, then, are at least important enough to be considered when examining anyone in chronic ill health.

In discussing these chronic cases let us reverse what we believe to be the natural process, and instead of tracing infection from the nose and throat downwards, consider the end-results first —the systemic condition which brings the patient to us, and, with this as a starting point trace any definite connection with upper-respiratory-tract infection. This is the order in which these cases usually must be worked out, for such patients first consult a doctor on account of a cough, an ache or distress, and have frequently forgotten entirely the first stages of infection. If the original source of the trouble is to be located it is essential for the physician to be on the look out for sinus trouble as a focus of disease, for generally we find only that for which we

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look. Frequently the patient is treated for the local condition only. He goes from one physician to another and finally becomes discouraged, or drifts to one of the more or less psychic cults.

Sinus infection may affect the general health by absorption through the lymphatic or blood stream, or because of the nasal discharge being aspirated or swallowed. There is usually some post-nasal discharge and, during sleep, when the portals are unguarded, some of this enters the tracheo-bronchial tree. If this condition persists over a long period chest symptoms are sure to result.

There is a fairly definite group of chest patients who complain of cough, with morning sputum and bronchitis and sometimes a slight evening rise in temperature. There is langour and fatigue, often nervous symptoms, such as headaches, depression and neurasthenia. Often there is a slight secondary anæmia and the patient is below weight. There are clinical and x-ray signs of congestion in the central portion of the lungs, perhaps extending into the base. In short, the patient has many of the symptoms of early tuberculosis, but tubercle bacilli are not found, even with the most thorough tests. The following cases will serve to illustrate this group.

CASE 1

J.R., a girl of seven years, referred by Doctor Malcolm, was in excellent health until the autumn of 1931 when she contracted a severe cold in the head. The acute symptoms soon subsided but the child did not get really well until Spring; she was irritable and easily fatigued and had frequent colds. During the summer she seemed to be in good health, but with the autumn came a recurrence of colds. There was a persistent cough, lassitude and irritability. Examination of the chest was negative. Nasal examination revealed a post-nasal discharge and discharge in the right nostril. Puncture and suction showed pus in the right antrum. The antrum was opened and drained. Culture showed pneumococcus. She was given an autogenous vaccine and made a perfect recovery without other after-treatment. The cough has disappeared, her disposition has improved markedly, and her colour is good.

This case illustrates how a temporary balance between the infection and the patient's resistance is frequently upset by lowered resistance due to a chill, fatigue, or other cause. The infection flares up and the discharge escaping over the pharynx and larynx sets up an acute cold. A poorly nourished child with repeated head colds and a throaty cough should always be examined for sinusitis.

CASE 2

P.A., a patient referred by Doctor Farris. He complained of pallor, lassitude and fatigue, some cough, with morning sputum and nasal snuffling. He had been seen by one of the doctors at Dr. Rollier's clinic in Lausanne the previous winter and pronounced anæmic, no definite cause being found. He was given sun treatments for six months and became tanned, but even then looked anæmic and there was no definite improvement. Examination showed general pallor and congestion at the base of the right lung. All tests for tuberculosis were negative. Blood examination.—Hæmoglobin, 70 per cent; red cells, 4,000,000; white cells, 9,000.

An x-ray of the head showed definite blurring of the left antrum, and slight blurring of the frontal and ethmoidal sinuses. A large opening for drainage was made into the left antrum. Culture gave pneumococcus. Treatments with irrigation and autogenous vaccine were carried out. The patient soon showed marked improvement in colour and vitality; the blood picture became normal, and the cough and chest symptoms disappeared. He gradually made a complete recovery and has been in excellent health for four years.

Note that these patients did not complain of nasal trouble; their chief symptoms were anæmia and cough. Cough is usually caused by irritation of the pharynx or of the tracheo-bronchial tree, and both these conditions are frequently induced by a post-nasal discharge. In ambulatory cases with a loose productive cough and a sputum free from tubercle bacilli suspect sinusitis.

Another group of sinus patients complain of lassitude, fatigue, mental depression, and general toxæmia.

CASE 3

J.M., a girl, aged 10 years, referred by Doctor Rowley. For one year previous to March, 1928, she had been in poor health, rather pale, tired easily, was irritable, with variable appetite and bowels irregular. At that time she was put in the hospital for investigation. The throat was red, otherwise normal. The chest was normal, both as to heart and lungs, though the heart beat was rather rapid. Kidneys normal. Blood: hæmoglobin, 65 per cent; red cells, 3,600,000; white cells, 9,000. Stools normal. An x-ray of the skull showed the left antrum to be somewhat cloudy. No stress was put on the antrum condition at that time. She was put on a regular living regime of diet and rest with hæmatinics. Much improvement resulted and she was sent to boarding school in the fall. In November she was sent home from boarding school with a diagnosis of possible tuberculosis. Clinical and x-ray examinations showed slight pneumonitis of the type found secondary to upper respiratory infection. Skin tests for tuberculosis were negative.

X-ray showed both antra to be blurred. Both were opened and the patient was put on autogenous vaccine. After operation she made marked improvement and is now in excellent health. After recovering from the operation she was taken south, and while in Philadelphia was checked up at the Chevalier Jackson Clinic. A bronchoscopic examination was made and a culture taken from the bronchi. The organism found was the same as that found by us in the antra, *viz., S. viridans.*

Doctor Rowley, who has observed many of these chest cases with nasal sinusitis, states that

the x-ray findings in the chest are usually more extensive than the clinical signs indicate; also they persist after the clinical signs have disappeared. Eventually, however, the x-ray findings also clear up if the nasal infection has been overcome.

The next case is typical of many which follow the various epidemics of "la grippe."

CASE 4

Mr. H.W.A. was in good health until the spring of 1927 when he had a severe attack of "la grippe." He went to bed for two weeks, then got around, but was far from well all summer. He was weak, unable to work and had sweating attacks with semi-collapse. His colour was bad and blood pressure low. Examination by Drs. Rowley and McGrand was negative, except for anæmia and rapid heart action. There were no local head symptoms, but an x-ray was taken and pansinusitis on both sides revealed. After extensive radical surgery on all the sinuses, which were completely filled with thick gelatinous and polypoid membrane, he made a good recovery, and is now in fair condition, though still nervous and subject to colds.

Note that in these cases the symptoms were lassitude, anæmia and depression and it was only by systematic examination that the sinusitis was discovered.

"La grippe" which does not clear up in a reasonable time should always suggest sinusitis. Many an acute infection diagnosed as "la grippe" is really a sinusitis from the start.

You will observe that several of the cases reported are in children. Sinusitis is far more frequent in children than is generally recognized. Children respond well to treatment. Often the removal of obstructing adenoids and diseased tonsils will clear up the sinusitis.

There is a group of gastro-intestinal cases with upper-respiratory-tract infection which gives the picture of catarrhal gastritis, anorexia, alternate constipation and diarrhœa, poor nutrition, lassitude and fatigue. Especially in children is such a picture seen, and examination of the nose and throat in these cases will frequently reveal the presence of a muco-purulent discharge which is swallowed. Sometimes adenoids and tonsils have been removed with little if any improvement, the nasal discharge persisting. Typical of such cases are the following.

CASE 5

J.C., male, aged 14, referred by Doctor Porter.

Complaints.—Headaches, abdominal pain, lassitude, poor appetite, nausea.

Family history.—Irrelevant.

Past history.—Normal infancy and young childhood. Soon after starting school he became thin, very nervous and was usually too tired for outdoor exercise.

Present illness.—Unable to attend school regularly; definite nausea in mornings. Pin worms had been discovered in the stools two months previously. He was given treatment; the stools at present are negative.

Physical findings.—Marked pallor; chronic bronchitis. Nose: post-nasal discharge; inferior turbinates swollen. A large adenoid was present; tonsils of medium size; pillars injected. Blood: red cells 4,200,000; white cells, 9,200; hæmoglobin, 78 per cent.

Treatment.—Tonsillectomy and adenectomy. At the time of operation the antra were punctured and aspirated. Pus was present in each antrum. Culture revealed pneumococcus. An autogenous vaccine was made and given. All the symptoms have disappeared. Appetite has returned and the child is decidedly better; nose dry; membranes healthy.

CASE 6

Mrs. P., seen in consultation with Doctor Rowley, complained of vomiting and diarrhœa at intervals for previous two months. Six years ago she developed arthritis which became chronic and had persisted. At the onset of the trouble a tonsillectomy was done with no improvement. The patient at present has a profuse post-nasal discharge, and an x-ray of head showed both antra to be blurred. A careful history shows that this trouble dates back to the onset of arthritis six years ago. There is a marked catarrhal gastritis present, stomach washings bringing up a half pint of mucus. The patient's general condition will not warrant much surgery, but besides the stomach washings, the antra are being washed out through a needle puncture.

Again we note that the sinusitis was not mentioned in the complaints, although it was undoubtedly a factor in producing the symptoms. The normal stomach with its acid gastric juice can take care of a surprising amount of swallowed pus, but if large quantities are continually forced on it, its defense is weakened; we get catarrhal gastritis and hypochlorhydria. The avenues of infection are no longer guarded and the way is open for gastric ulcers, gall bladder infection, and appendicitis. Over 2,000 years ago Hippocrates wrote, "Their bellies are subject to frequent disorders owing to phlegm running down from the head." This observation has frequently been neglected, but never disproved. Williams and Pickworth[1] state that nasal infection is a factor not only in gastric and duodenal ulcer but in appendicitis as well. In an analysis of 90 consecutive cases of sinusitis 14 had had appendectomy and 4 had been operated on for gastric or duodenal ulcer.

So many factors enter into the picture in asthma that one hesitates to stress any one cause. Nevertheless sinusitis is universally recognized as an important factor in the disease in many cases. In this field the researches of Kern and Godey,[2] of the University of Pennsylvania, are of great interest. These men are internists studying the influence of sinusitis on chest conditions. They report the incidence of sinus disease in 200 asthmatics, and used as a check 50 persons who gave no history of respiratory

disease and no history indicating that they had ever had sinus infection. In this group of 200 asthmatics, clinical evidence indicated active sinus infection in 67 per cent, or three times the proportion found in the control group. They conclude that at least two out of three asthmatics have active sinus disease, and unless the sinus disease is adequately treated the patient will not be completely relieved of his asthma, regardless of what other etiological factors enter in. Judging from x-ray evidence in the control group, they estimate that 76 per cent of our population have at some time had sinusitis. Study of a series of cases of bronchiectasis revealed sinusitis in every case.

Headaches, trigeminal neuralgia and sphenopalatine neuralgia are frequently due to sinusitis.

This brief outline of the complications of sinusitis leads to the conclusion that nasal sinus infection is a very prevalent disease which is often overlooked. Frequently the diagnosis and adequate treatment require the closest cooperation between internist, rhinologist and roentgenologist. The physician who considers the head as something apart and fails to remember that infection there is a constant source of chest and gastro-intestinal disease and of general toxæmia is not fair to his patient. On the other hand, the rhinologist who cannot see beyond a crooked septum or hypertrophied turbinate is even farther astray, for he will do a great deal of unnecessary operating and overlook the cases that most need other treatment. It has been abundantly demonstrated that one can find the worst type of mechanical blocking in the nose and still have a perfectly healthy patient; again we may have semi-invalidism from a chronic sinusitis which gives no local sign or symptom and which can be diagnosed only by careful detailed and repeated examinations. We must consider the patient rather than the local condition.

Sinus patients usually present themselves first to their family physician; hence it is necessary that he be familiar with the main points in diagnosis so that he may select the cases which require a detailed examination. As in all diagnosis, the taking of a careful history is essential. Usually the patient has become so accustomed to a nasal discharge or morning cough that he is entirely unconscious of it and only systematic questioning will bring out the fact. Examination of the pharynx is very important. Rarely do we have a normal pharynx with a chronic sinusitis. Red, swollen areas, laterally, adjacent to the posterior pillars, indicate irritation from post-nasal discharge. Frequently the surface of the pharynx is glazed in appearance or dotted with hypertrophied follicles. A post-nasal discharge may sometimes be seen. In the nose any discharge or swollen œdematous membrane or turbinate indicates trouble. The antra are easily transilluminated, and this often gives valuable information. The recent practice of injecting lipiodol into the sinuses in connection with x-rays is a great aid to diagnosis.

What may we expect from treatment? In acute or semi-acute cases we expect a large percentage of complete cures. Indeed the majority of acute cases make spontaneous recoveries, many of them never being recognized. When the infection is established, but still in the early stages, many patients, especially children, do well under a regime of rest and graduated exercise, proper diet, sunlight, and astringent treatment in the nose. Where definite pus is present drainage is usually required. When the disease has been established for years and there are definite tissue changes and destruction perfect recovery is rare. The treatment of chronic disease in any field of medicine is no sinecure and brilliant results are few. On the other hand, a fair proportion of chronic sinus cases can be symptomatically cured and many a life of semi-invalidism and suffering can be changed to one of comparative health and comfort, and our most grateful patients and often our most useful citizens are of this type. The reverse side of the picture is the progressive, neglected case with its untold misery from mental depression, headache, chronic bronchitis and general toxæmia.

SUMMARY

1. Nasal sinusitis is a very prevalent disease, which is frequently overlooked because of the absence of local symptoms.

2. No search for a focus of infection is complete without a thorough examination of the sinuses.

3. In the majority of cases of pharyngitis, laryngitis, bronchitis, and bronchiectasis, sinusitis is a factor. The infection from the sinuses probably spreads into the lower respiratory tract by aspiration during sleep.

4. Sinusitis is very common in children.

Treatment given early may forestall serious complications and invalidism.

5. Cooperation between the family physician and the rhinologist is essential for the diagnosis and proper treatment of many obscure cases of sinusitis.

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THE GENERAL PRACTITIONER AND CONVERGENT CONCOMITANT STRABISMUS

BY J. AIMÉ DARCHE AND LIONEL DARCHE,

Sherbrooke, Que.

THE general practitioner in the course of his daily visits often sees squinting children at a very early stage, sometimes even before the age of 2, but at least before 5. Usually, these children are losing the sight in one eye and are developing an unsightly deformity. A good Samaritan, ready to relieve every human ailment, is the family physician, who, however, often passes by these cases without a look at them. Yet at this stage he could effectively commence an atropine treatment and carry it on himself with complete success with the cooperation of the oculist who should provide for the fitting of the proper glasses.

Many squinting children live at a considerable distance from the oculist. Their parents think there will be time enough to have them treated just before school time. This of course is too late, for then the loss of sight is found to be complete in one eye and partial in the other. This squint may cause a bad inferiority complex, which is a serious handicap in most careers.

Many children, squinting from the age of 2 to 5, are brought to the oculist at the age of 8 to 10, or even later, with the hope that glasses, or some eye training, or the "cutting of a little nerve," will correct the deformity and restore the sight. This is a sad and too prevalent an error, for at that late age orthoptic exercises are generally powerless, and surgery can only accomplish cosmetic improvement. In most of these cases all that the oculist can do is to fit a good lens to the better eye, the other eye not responding to any adjustment of lens, for the suppression of ocular sensations is of too long standing. At that age, persistent bandaging of the good eye might awaken some sight in the poorer one. But, alas, the habit of using the good eye exclusively cannot be broken and the great difficulty is the development of the sense of fusion and the acquiring of the habit of using that sense consistently and unconsciously after orthoptic exercises have been carried on faithfully. A different state of affairs would have prevailed however if at an earlier stage the case had been given the atropine treatment. The general practitioner, being closer to these patients, is available to educate the parents and to commence treatment at a favourable time, continuing this until both eyes are straight and normal.

The treatment consists in forcing the child to depend entirely upon the poorer or squinting eye by covering the good one; the equivalent of this being to instill drops of atropine in the good eye, thus temporarily eliminating its use. In this way the poorer eye has a chance to exercise, improve its nutrition and resume its normal evolution; it grows out of its physical defects and the function develops the organ, if it does not create it. We prescribe atropine sulphate, 2 grains; boiled or distilled water, 4 drms. Sig: one drop every two days in the better eye until the weak eye has become the better and the straighter of the two. Then the drops are put in the other eye, the treatment alternating from one eye to the other after each period of 6 weeks until the fitting of glasses has become possible. As a general rule this should be done about the age of three years.

During the week prior to visiting the oculist for the fitting of glasses, the drops should be put in both eyes daily. This ensures the fullest possible correction of the hyperopia, greatly improves clearness of sight, helps to repress undue accommodative effort, and consequently diminishes exaggerated convergence. The glasses, worn constantly, combined with the atropine treatment provide a short cut to straight eyes. The drop treatment should be resumed and continued as before the examination for glasses, until this is an accomplished fact.

The length of the treatment varies according to the mental and physical characteristics of growth. It may be prolonged on account of some constitutional weakness, children's diseases, or poor hygienic conditions, which should be attended to from the first.

Convergent concomitant strabismus is the result of a delay in developing the sense of fusion. One of the most frequent contributing factors is the more pronounced hyperopia of one eye. Children are born hyperopic; the antero-posterior axis of the globe of the eye is too short; its lens is nearly spherical. During the first years of life if there is not a normal and symmetrical growth of the eyes and cranium a more pronounced hyperopia in one eye may persist and much poorer vision on that side is the consequence. This results in lack of a sufficient stimulus to coordinated movements of the eyes. Corresponding points in the retina of each eye, linked together in the brain-centres, cannot be focussed properly by the external muscles. The fusion desire does not develop; the suppression of the image of the weak eye rapidly becomes a habit. Inhibition to exaggerated convergence being absent, the convergent concomitant squint is established.

The use of atropine at the proper time in the better eye and good glasses force the poorer eye to work. This stimulates a better neuro-muscular activity and better vision. This in turn supplies a more adequate stimulus to coordinated movements and awakens normal fusion desires. Binocular single vision is eventually established and fusional reserves are gradually built up. This means normally functioning eyes.

On noticing a case of squint, the atropine treatment should come to mind, and be started at once in order to gain time, but a diagnosis should be made as soon as possible between concomitant strabismus and alternating strabismus. In the alternating variety, the vision is good in both eyes. In the other kind, one eye is quite amblyopic. If both eyes are found to be equal in sight, the atropine treatment has done no harm, but it will do no good and may be dropped, for there is an actual upset somewhere between the brain centres and the retina. This variety should receive early attention from the oculist. Where one of the eyes is found amblyopic, or nearly so, the squint is of the convergent concomitant (unilateral) variety, and the early atropine treatment is a great boon and should be continued relentlessly by the general practitioner until a cure is obtained.

INVERSION OF THE UTERUS*

By WILLIAM BETHUNE,

Hamilton

THREE cases of inverted uterus are reported here. The first was a chronic case, the second acute, and the third, given in detail because of its complications, was more interesting, and I have been unable to find anything in recent literature of a similar kind.

CASE 1

Mrs. T., aged 24 years, a primipara. Her puerperium and labour were normal, and she was out of bed on the fourteenth day. Twenty-one days after delivery she motored to Preston and on her return journey shortly before she reached her home she felt a very severe pain in the pelvis and commenced to bleed. On her arrival at home the family physician was called. He immediately packed her and sent her to hospital. I saw her next day, and, on removal of the packing, found she had a complete inversion of the uterus. There was no bleeding. A colpohysterotomy was done. The patient had an uneventful recovery, and four years later was delivered of a healthy child, after a normal labour.

CASE 2

Mrs. M., aged 22 years, a primipara, was delivered of a healthy female child after a normal puerperium and normal labour. When being lifted from the stretcher into bed, about three-quarters of an hour after delivery, she complained of a severe pain in the pelvis. She had profuse vaginal hæmorrhage and shock. When I saw her about two hours later she was pulseless and died within a few minutes.

CASE 3

Mrs. E.S., aged 36 years, was admitted to the Medical Ward of the Hamilton General Hospital, on December 20, 1932, seven and one-half months pregnant. She had had eight previous pregnancies. Five children were alive and well, the eldest 15 years, the youngest 2 years. The third was a "blue baby," dying at birth. The fifth and sixth pregnancies were terminated by self-induced abortions between one and two months. The other five pregnancies were normal.

The patient had been quite well up to one week before admission to hospital. During this time she was kept in bed and treated for hypertension and albuminuria by the family physician. She had had no headaches or gastric disturbance, but had complained of frequency of urination and slight swelling of feet and ankles for the past two weeks.

* Read at the Annual Meeting of the Ontario Medical Association in Hamilton on June 1, 1933.

Past history.—Scarlet fever as a child, and cholecystectomy in 1930.

Examination on admission.—All systems were normal except the cardio-vascular and genito-urinary. Cardio-vascular; blood pressure 170/105; pulse 104. The heart sounds were clear and regular; no murmurs. Hæmoglobin 65 per cent. Red blood cells 3,540,000. Urine: albumin ++; many leucocytes. Blood chemistry: urea nitrogen 16.75; creatinine 1.6; sugar 0.10. There was slight œdema of the lower limbs.

January 8, 1933, urine: albumin ++++; a few leucocytes, and an occasional granular cast. Kidney function test: (1st specimen 30 c.c., urea 1.91 or 0.57 grm.; 2nd specimen 45 c.c., urea 2.09 or 0.94 grm.) normal.

Treatment.—Low protein diet and ferrosyn t.i.d. On this date she was discharged from hospital to be under the care of her family physician.

On January 27, 1933, she was readmitted to the hospital to the maternity service in labour. She was delivered of a small living female child. The placenta was expressed twenty minutes after. Placenta and membranes were apparently complete; no tears. The uterus was firm but large; note was made following delivery of high fundus.

During the first two days after delivery the temperature and pulse were normal. On the third day the temperature rose to 101°, and the pulse to 120, when she had a severe chill. She was given 10 c.c. antistreptococcus serum. A blood culture was negative. She had several more chills and continued to run a septic temperature with high pulse and had foul lochia.

On the 19th day after delivery the attending obstetrician examined the patient and found a large sloughing mass in the vagina which he attempted to remove by traction, but was unsuccessful, and had her transferred to the gynæcological service. When I first saw her she was extremely pale, with a rapid pulse, and apparently septic. The hæmoglobin was 23 per cent and the leucocyte count 28,500. She had a dirty grey sloughing mass with foul odour, partially protruding from the vagina. She was taken to the operating room and under gas-oxygen anæsthesia was examined and found to have an inverted uterus with a round sloughing mass closely attached to the fundus. This mass was separated with some difficulty by the fingers and removed. She bled freely. The vagina was immediately packed with gauze and 1000 c.c. of 5 per cent glucose were given intravenously, the patient was returned to the ward and treated for shock, and six hours afterwards was given a blood transfusion of 500 c.c. Forty-eight hours later the packing was removed with some bleeding. The vagina was repacked and the patient given a blood transfusion of 500 c.c. Her condition improved. The packing was again removed after 48 hours and another transfusion given.

On February 27, 1933, ten days after the removal of the tumour, the hæmoglobin was 34 per cent. The patient's condition continued to improve until March 6th, when she developed a phlebitis in the left femoral vein, and eight days later a sudden pain in the left chest, with a definite pleural rub. One month after the chest complication the patient was in good condition; hæmoglobin 51 per cent; red blood cells 3,840,000; leucocytes 7,400. Sub-total hysterectomy was performed by the abdominal route. One thousand c.c. of 5 per cent glucose were given intravenously. The patient had an uninterrupted recovery, and was discharged from hospital twenty-six days after operation.

Pathological diagnosis.—Leiomyoma of uterus, with acute inflammation. The specimen consisted of a large mass of pinkish grey foul-smelling tissue, measuring 15 cm. in diameter.

Acute inversion of the uterus is one of the most trying complications of the puerperium for the attending accoucheur, especially when the condition is not diagnosed early, for the patient may sink rapidly into profound shock and death may follow within a few hours. All writers on the subject refer to the extreme rarity of inversion. From the fact that the accident occurs more often in homes and in the hands of the incompetent than in hospitals under skilled management, it is fair to assume that inversion is not so rare an occurrence as recorded statistics would indicate. Many cases are never reported, and others where death occurred and not diagnosed have been registered as post-partum hæmorrhage.

In perusing the literature on inversion of the uterus one is impressed with the diversity of opinion relative to the frequency of its occurrence. It is reported by some authors as low as 1 in 400,000, and by others as high as 1 in 25,000. Faulty technique in delivery is responsible for a large proportion of all cases of inverted uteri, but on the other hand the majority of cases probably occur spontaneously; of the 437 cases reported by Thorn 54 per cent were spontaneous. Therefore it would be logical to accept puerperal inversion as an unfortunate accidental complication of the third stage of labour, due primarily to an atonic uterus, possibly precipitated by fundal implantation or adherent placenta, a violent Credé manipulation, or taxis on the cord. Although forcible expression of the placenta and traction on the cord are contributing factors in the production of inversion, yet no amount of force in the effort to deliver the placenta would invert a firmly contracted uterus, nor would the cord withstand sufficient traction to invaginate a uterus well contracted. Further, these factors do not explain the occurrence of inversion in which the placenta has been delivered without assistance. More than half the cases occur in primiparæ in whom fundal attachment of the placenta is more common than in multiparæ, and the uterine contractions are more forceful. Moreover, a firmly contracted fundus may find its way through a dilated and relaxed lower uterine segment and cervix; hence it is apparent, that complete relaxation of the uterus is not essential to the development of inversion. Given a limited area of atony under direct pressure from above or traction from below, then the contraction of the uterus may well participate in affecting a complete inversion. The condition is analogous to intestinal intussusception. First, there is a

dimpling or cupping of the uterine wall, then the invaginated portion is seized upon by the surrounding uterine muscle, which, treating it more or less as a foreign body, extrudes it more or less completely. To account for the cupping one must presume a general or local atony of the uterine wall, for general contraction of the uterus would correct any tendency to dimpling. A pedunculated tumour, or a partially separated placenta, could readily start an invagination, provided that the uterine wall was atonic, but such a condition need not be present any more than a similar condition is a necessary antecedant to intestinal intussusception. Frequently a depression in the uterine wall corresponds to the site of attachment of the placenta and traction on the cord precipitates the inversion.

In most cases the inversion takes place within one hour after labour. As to the time of recognition of the inversion, Jones, in his analysis of 191 cases of acute inversion, found 19 recognized at the end of the second stage, 44 at the completion of the third stage, and 141 within twelve hours following delivery of the placenta.

The mortality is high, estimated at from 14 to 25 per cent. It is much higher in the home than in the hospital. Probably nine-tenths of the deaths occur within two hours of the completion of the third stage. In the 399 cases of acute inversion of the uterus reported by Thorn the mortality was 16 per cent. Approximately half the deaths were due to hæmorrhage, nearly one-fourth to shock, and one-fourth to sepsis.

The outstanding symptoms are prolonged post-partum hæmorrhage, lower abdominal pain and surgical shock. In the atypical case none of these symptoms may be present; then the true condition will not be discovered, but will pass on to the chronic state. Hæmorrhage may be moderate or profuse, usually the latter. Pain may vary in intensity, and is always present unless the patient is under narcosis. It is usually of a sharp continuous, cramp-like character, localized and most intense in the region of the bladder, and radiating to the inguinal region. Unconsciously the patient draws up her knees, carries her hands over the hypogastrium, and voices her pain with unmistakable groaning. Signs of shock soon follow these previous symptoms, and, unless immediate steps are taken to combat it, it increases with alarming severity. The pulse gives the first warning, rapidly rising in rate, and becoming smaller in volume until it becomes imperceptible. Pallor soon follows and increases into livid whiteness with cold sweat. In the presence of any of these symptoms, increasing in severity, a bi-manual pelvic examination should immediately be made.

In considering the management of acute puerperal inversion we should bear in mind that a successful correction of the inversion at the expense of a life is not an obstetric triumph. In perusing the records of cases reported in the last twenty years one is impressed by the appalling number of deaths following reposition by taxis. Phillips records a mortality of 30 per cent here in the presence of shock and hæmorrhage. In contrast to this, he reports a mortality of only 5 per cent where the patient is first treated for shock and hæmorrhage and the condition corrected by the abdominal route. In many instances the fatalities are unquestionably the result of ill-advised intervention in the presence of shock. A blanched patient is always a poor surgical risk. One should first control the loss of blood and then combat shock, and, with this accomplished, it is time enough to correct the inversion. In the absence of profound shock or great loss of blood the uterus should be replaced at the earliest possible time. Under such favourable conditions early replacement should not be difficult. Delay of an hour or so may result in the tightening of the constricting cervix and defeat all attempts at replacement short of an operation. However, if reposition does not readily take place under non-surgical efforts either vaginal hysterectomy or replacement by the abdominal route should be done. Foster Kellogg advocates abdominal reposition because of the readiness with which the uterus can be replaced with almost instantaneous disappearance of shock. He is of the opinion that more loss of blood and greater intensity of shock will result from efforts at vaginal replacement.

Avoid the further use of pituitrin or ergot, because the former may convert a partial into a complete inversion, and the latter will act on the lower uterine segment and on the cervix, thus increasing the constriction ring and make the replacement more difficult if not impossible.

When bimanual reposition is attempted the patient should be relaxed by surgical anæsthesia. One hand is placed on the abdomen just above the symphysis and the tips of three or four fingers are inserted into the ring with

an exerting pressure outward, in that way causing dilatation. The other hand is inserted into the vagina, and pressure inward on the lower uterine segment close to the cervix by the index, middle and ring fingers, thus replacing that portion of the uterus which inverted last and holding on to any gain toward replacement and continuing "feeding" of the body of the uterus through the crater, always working on the same side. Having completed the replacement of one side of the body of the uterus, the fundus and, with it, the entire uterus will snap back into the pelvis, and the vaginal hand will be felt within the cavity of the uterus. This hand should be kept in that position to prevent a recurrence of the inversion, while the fundus is gently massaged by the abdominal hand and pituitrin given. On contraction of the uterus the vaginal hand may be withdrawn, and as a precaution against recurrence the cavity may be packed with sterile gauze which is removed twenty-four hours later. With this procedure one must guard against rupture of the uterus by undue violent pressure with the vaginal fingers.

Failing to replace the uterus manually after a few minutes of careful effort, the shock must be treated; blood transfusions, heat, lowering the patient's head, and stimulation are indicated. Also pack the vagina if there is hæmorrhage. After the patient has recovered sufficiently to withstand a surgical operation the patient should again be anæsthetized and reposition by the abdominal route, known as Huntington's technique proceeded with. This consists in a laparotomy and replacement of the organ with the aid of an Allis forceps inserted within the crater for about an inch, grasping the surface of the uterus on both sides. A simultaneous upward pull will draw a portion of the uterus out of the ring, and gradually in successive bites and with upward traction the uterus is restored to its normal position. In the chronic type of inversion, where there is no evidence of sepsis, replacement by colpo-hysterotomy is the operation of choice; on the other hand, where there is any apparent abnormality or sepsis hysterectomy is the best method of procedure. Findley advocates a more general application of vaginal hysterectomy because of the high incidence of fatalities ascribed to sepsis, which he estimates to be the cause of about one-third of all deaths.

In conclusion there are a few points I would like to stress.

1. Where hæmorrhage, pain, rapid pulse or shock follow the third stage of labour an immediate vaginal examination should be made.

2. Prolonged manipulation in attempting to replace the uterus markedly increases the symptoms; if reposition does not take place readily within a few minutes further attempts usually prove disastrous.

3. If the patient has not been seen within an hour of the inversion no attempts at manual reposition should be made, but every effort made to improve the general condition of the patient preparatory to the abdominal replacement.

RECENT ADVANCES IN ANÆSTHESIA*

BY HAROLD R. GRIFFITH, M.D.,

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IN all branches of medicine much that we herald as scientific advance is really nothing more than a change in fashion. It is interesting to look back a few years over the records of any of the specialties and to see how things about which we were dogmatic have passed into oblivion. This is true of anæsthesia, and yet we are justified in stating that, as compared with fifteen years ago, a patient may face the ordeal of operation with more assurance of safety and comfort, and the surgeon may operate with more convenience because of real advances which have taken place in the science and art of anæsthesia. I shall try briefly to review the reasons for this change.

Anæsthesia has improved principally because anæsthetists have improved. As long as the administration of anæsthetics was the refuge for the failures of the profession, and consisted in the routine dropping of ether day after day, there was little to attract the ambitious, intelligent medical graduate. Early in this century

* From the Department of Anæsthesia, Homœopathic Hospital of Montreal.

Read before the Canadian Medical Association at Saint John, N.B., on June 22, 1933.

a few men in England and America, and men here in Canada, saw the possibilities of advancement, and began to inspire young men to take up the specialty as a worthy life work. To-day the anæsthetist considers himself not as an embryonic surgeon but as a specialist in one of the branches of internal medicine; for the problems of anæsthesia deal with metabolism, physiology, pharmacology, biochemistry and pathology far more than with the mechanics of surgery. It is this changed point of view toward anæsthesia which has brought anæsthetists into collaboration with chemists, physicists, pharmacologists and experimental surgeons. From this collaboration have come new conceptions, new drugs, and new methods, which have so changed the principles and practice of anæsthesia.

Modern anæsthesia really began about 1914 when the mixture of oxygen with nitrous oxide first came into general use. For although the anæsthetic properties of nitrous oxide had long been known, when the gas was administered in a pure form the patient soon became asphyxiated. With the addition of oxygen a truly non-irritating, non-toxic anæsthetic agent became available for prolonged use in all kinds of surgical operations. The first machines for the administration of gas-oxygen were crude, but surgical need stimulated inventive genius, until now we have the marvellously accurate and convenient gas-oxygen apparatus of Foregger, McKesson, Heidbrink, Connell and others. These machines will deliver any desired mixture of gases safely, economically, and in measured amounts. Yet anæsthetists have not been entirely satisfied with nitrous oxide, as it does not give sufficient relaxation for careful abdominal surgery, and too often in order to secure anæsthesia one must cut down the oxygen supply to the point of cyanosis, with all the resulting damage of prolonged anoxemia.

In March, 1923, Easson Brown, of Toronto, published in this *Journal* the first report of the anæsthetic properties of ethylene gas, and a few days later Luckhart and Carter, of Chicago, working independently of the Toronto investigators, published their first report of a series of administrations of ethylene-oxygen to human beings. Luckhart and Carter's work was extensive and convincing, and to them has generally been given the credit for the introduction of this new anæsthetic. Ethylene is an unsaturated hydrocarbon with the chemical formula C_2H_4. It has a characteristic odour, is somewhat lighter than air, and diffuses very rapidly in the atmosphere. Its anæsthetic properties are more closely allied to ether than to nitrous oxide, in that it is to some degree a lipoid solvent. Extensive pharmacological investigations of ethylene have been carried out during the ten years since its introduction, and some of the best work has come from the Departments of Pharmacology of McGill and Toronto. Prof. Stehle, Dr. Wesley Bourne, and their associates have shown that ethylene, like nitrous oxide, is harmless to tissues and to organic function when used in conjunction with sufficient oxygen. They have investigated its effect on liver and kidney function as well as on respiration and circulation, and have found it to be much less toxic than chloroform or ether or ethyl chloride. Its advantage over nitrous oxide is that it produces better muscular relaxation, and that anæsthesia can be maintained with just as high a percentage of oxygen as we normally breathe. Speaking from the clinical standpoint, and after nine years of use and 8,000 administrations, I personally am very enthusiastic about the advantages of ethylene. I am sure that it allows me to produce better anæsthesia in certain cases than I could with nitrous oxide-oxygen, and it is a veritable life-saver in certain of the poor risk cases. The sicker the patient and the more severe the operation, the more likely I am to choose ethylene-oxygen.

Ethylene has not been adopted in all hospitals, principally for one reason—its inflammable and explosive character. A few small explosions during the early years of ethylene were widely published, and surgeons and hospital authorities became thoroughly frightened. Rather than turning our backs on a valuable drug, I think we should study the conditions of its administration, and see whether it is not possible to use it as safely as we do gasoline in our automobiles. We know accurately the limits of explosiveness of ethylene-oxygen and ethylene-air mixtures, and we usually keep our anæsthetic mixtures outside these limits. But no mixture will explode without a source of ignition, and much attention has been paid to the elimination of static sparks—an ever-present and uncontrollable element in the dry heated air of our Canadian houses in the winter time We know that when a relative humidity of over 50

per cent is maintained in a room all static electricity is dispersed, and that this is a more effective protection than the most elaborate grounding devices. For three years we have had a simple but adequate humidifier in our operating room, which is turned on when hygrometer readings show that humidity has fallen below the safety point. Since we have had this device I have seen no spark even on the coldest day. Besides giving protection from explosion, proper humidification of the atmosphere is of benefit to the tissues of the patients and adds to the comfort of doctors and nurses. Because ethylene diffuses so rapidly in the air, forming an extremely dilute mixture a few feet away from the exhalation valve, we do not hesitate to use the cautery as required in abdominal and pelvic operations. However, we do not use ethylene, ether or other inflammable anæsthetics when in the presence of x-rays, diathermy, or other high-frequency electricity. I feel that in too many hospitals there is a false sense of security from anæsthetic explosion simply because ethylene is not used. Very often when ether vapour is introduced into a bag of nitrous oxide oxygen an explosive mixture is produced which is just as dangerous as any ethylene mixture. Dr. Isabella Herb, of Chicago, who was the first anæsthetist to use ethylene, has just completed a survey of the United States and Canada with reference to the incidence of ethylene accidents. A total of 1,005,375 administrations of ethylene oxygen were reported by 534 anæsthetists. There have been 20 explosions, causing 5 deaths and one injury. However, the same anæsthetists reported 39 explosions from nitrous oxide oxygen-ether mixtures, causing 5 deaths and 7 injuries. I think these figures call for an intelligent consideration by every hospital in the country of this problem in its relation to local conditions.

Specialized methods of using the gaseous anæsthetics have been devised in order to extend their advantages to all kinds of operations. Following the lead of certain English anæsthetists, some of us in Canada have been much interested in the development of endotracheal gas anæsthesia with either nitrous oxide or ethylene. This makes possible extended operations under gas with the mouth open, and makes the surgeon's work more convenient in any operation on the head. It is the method I use by choice in abdominal operations in patients who are fat, or who for some reason are likely to have upper respiratory obstruction. There is no more necessary attribute to good anæsthesia than an unobstructed airway, and there is no surer, safer method of securing this than by the use of a fairly large endotracheal tube. With equipment for intratracheal oxygen and carbon dioxide one has available at all times the very best method of artificial respiration to combat surgical or anæsthetic accidents, to resuscitate the asphyxiated patient or the newborn baby. The introduction of a tube into the trachea is a simple procedure for the experienced anæsthetist. For thoracic surgery, Waters, Coryllos, and others have made a further specialization of endotracheal anæsthesia into endobronchial anæsthesia, using a small inflatable balloon to block off the main bronchus of the lung to be operated on, and giving gas-oxygen anæsthesia into the other lung alone. Dr. E. W. Archibald, of Montreal, feels that this will be one of the most useful developments in lung surgery, as it prevents infection or blood spreading from one lung to the other during operation. Ethylene makes an ideal anæsthetic agent for this kind of surgery.

Carbon dioxide was introduced into the anæsthetist's equipment a few years ago and has proved to be of great value as a respiratory stimulant. Last year Stewart, of the Montreal General Hospital, reviewed the subject of post-operative pulmonary complications, and he is of the opinion that the greatest single factor in the prevention of so-called "ether pneumonia" is adequate ventilation of the lungs induced by a proper mixture of carbon dioxide and oxygen at the end of the anæsthetic, and periodically for several days post-operatively.

Modern suction apparatus has been another important factor in the prevention of chest complications. Chevalier Jackson and his disciples have shown us that post-operative "pneumonia" is really pulmonary atelectasis with more or less pulmonary collapse, that an obstructed bronchus is usually the cause, and that bronchoscopic suction when practised early in the case will clear up the condition. It is now a routine procedure by many anæsthetists to suck out mucus from the pharynx and trachea whenever there is excessive secretion. Every operating room should be equipped with suction apparatus.

Waters, of the University of Wisconsin, and Foregger, of New York, have devised a system for the administration of gas-oxygen anæsthesia

by what they call the "closed circuit" method. It is customary to waste large quantities of nitrous oxide or ethylene during anæsthesia in order to get rid of the toxic products of respiration, namely, excess carbon dioxide. Waters simply abolished any exhalation valve and introduced a cannister of soda-lime between the mask and breathing bag. This absorbs the carbon dioxide, and permits the use of the nitrous oxide or ethylene over and over again. Oxygen need be added to the mixture only in sufficient quantity to meet the metabolic requirements of the patient. The economy of this method of gas anæsthesia is obvious, as it reduces the cost to about twenty-five cents an hour, but Waters also claims that the conservation of body heat and moisture is of great value, and from my own observation I believe it is true that respiration with this method very nearly approaches that observed during physiological sleep.

Dread of the operating room, and of anæsthesia has been an important factor in determining the attitude of the average patient toward modern surgery. During the past five years there have been important developments in pre-anæsthetic hypnosis which have resulted in removing the danger of any psychic shock in connection with anæsthesia or operation. Avertin was introduced in Germany in 1927. It was accepted with enthusiasm, and its use spread to America about four years ago. It is now widely used in this country and is filling a valuable place. It is really tribromethyl alcohol ($C\ Br_3.\ CH_2OH$), a white crystalline substance. "Avertin fluid" is the crystalline avertin dissolved in amylene hydrate, and is given per rectum in a 2.5 per cent solution in distilled water. The dose is based on the weight of the patient. Avertin was first regarded as a complete anæsthetic and was given in sufficient dosage to produce surgical relaxation. But just as with alcohol, people vary greatly in susceptibility to the drug, and too many cases were reported of "avertin accidents" — death from cessation of respiration or from circulatory shock. So now we generally use avertin as a so-called "basal anæsthetic", and we give it in doses just sufficient to put the patient comfortably to sleep, but not to give full surgical anæsthesia. We use ethylene, nitrous oxide, or ether in addition during the actual period of operation. I feel that avertin used in this way is safe and extremely valuable. The induction and the awakening are so pleasant that patients are very enthusiastic about it. It is well tolerated by even very young children, and has saved many a nervous youngster from the terrifying adventure of violently induced anæsthesia. As with all irretrievable anæsthetic agents my practice is to use avertin mainly in the strong good-risk cases, and to stick to more controllable ethylene or nitrous oxide for the very sick patients. Ephedrin and coramine seem to be effective antidotes for accidental overdosage with avertin.

The barbituric acid derivatives, of which there are hundreds, have been the object of much pharmacological investigation in regard to their hypnotic powers. Five years ago sodium amytal (sodium iso-amyl-ethyl barbiturate) was introduced as a general anæsthetic for human beings, after its extensive use as a laboratory anæsthetic in animal experimental surgery. When given by the intravenous route it produces rapid, pleasant, long-lasting and fairly deep anæsthesia. After a fair trial it was generally decided by thoughtful anæsthetists that this was too powerful a drug and somewhat too dangerous a respiratory depressant to be used indiscriminately, so its intravenous use in anæsthesia was given up in favour of oral or rectal administration. When given by mouth in adequate dosage it gives satisfactory pre-anæsthetic hypnosis. About three years ago the isomeric salt of sodium amytal called pentobarbital sodium or "nembutal" was introduced and it is now the general opinion that this drug has some advantage over sodium amytal, in that it has a more rapid and shorter acting hypnotic effect and may be given in smaller doses. Both these drugs can be given per rectum in cases of vomiting, and they both seem to have a direct sedative action on the vomiting centre. Sodium amytal intravenously is of the greatest value in controlling the convulsions of eclampsia, strychnine poisoning, tetanus and meningitis, and I believe every hospital should keep it on hand for emergency use in these conditions. Grabfeld, of the Peter Bent Brigham Hospital, Boston, recently conducted a clinical investigation to determine the comparative efficiency of various hynotics used for the purpose of inducing sleep in hospital wards. He found that the two cheapest drugs, chloral hydrate and barbital (veronal), were also the most efficient, and that in the average case there is nothing to be gained by prescribing fancy hypnotics which are so vigorously advocated by various commercial houses.

Owing to the influence of Labat, in New York, and Lundy, at the Mayo Clinic, spinal and regional anæsthesia have come to be recognized as within the province of the anæsthetist. The choice of anæsthetic to be used should be a matter for collaboration between the surgeon and anæsthetist and should be based entirely on the circumstances of the individual case under consideration. The attitude of most of the leading anæsthetists toward spinal anæsthesia is that it is definitely indicated in certain conditions with certain types of patients, but that it should not be regarded simply as a substitute for general anæsthesia in patients who are too sick to be given ether. Patients with active respiratory infection do well under spinal anæsthesia, and it is indicated in many cases where extreme relaxation is required. It is often the method of choice in healthy individuals for hæmorrhoidectomy, herniotomy and in some operations upon the lower extremities. Some of us feel that good relaxation and the safest anæsthesia for upper abdominal surgery may be obtained by intratracheal ethylene and ether, but there are other equally competent anæsthetists who prefer spinal anæsthesia for these cases. It has been definitely established that post-operative pulmonary complications are somewhat more common following spinal anæsthesia than a well conducted inhalation anæsthetic. The added mental strain to many patients should be taken into consideration before deciding. The terrific headaches we often used to see following spinal anæsthesia have been practically eliminated since we began using very fine sharp needles for our lumbar punctures. The drug most commonly used is novocaine, in the form of sterile crystals which are dissolved in a few cubic centimetres of cerebrospinal fluid and re-injected into the lumbar subarachnoid space. Personally, I feel there is some advantage in the French "Neocaine", a form of novocaine crystals advocated by Labat.

There is at present much research work in progress regarding the toxicity of novocaine and its method of diffusion in and absorption from the spinal canal. Questions of dosage, site and rate of injection, degree of dilution, the influence of gravity, etc., are not yet definitely settled. Years ago Babcock, and more recently Pitkin, advocated a mixture of drugs of low specific gravity in the hope of obtaining more controllable spinal anæsthesia. These solutions have now been generally abandoned in favour of the safer pure novocaine. The new drug "Pantocain" gives longer anæsthesia than novocaine, as also does "Pipercain" an experimental product not yet on the market.

There is no time in this brief review to discuss the present status of local and regional anæsthesia. Many surgeons are finding satisfaction in turning over this part of their work to the specialists in anæsthesia. Some anæsthetists are using their special knowledge to make diagnostic and therapeutic nerve injections. By properly conducted paravertebral novocaine injection we are able to cut off certain of the viscera from their nerve supply and thus aid in the localization of disease. Dogliotti's method of subarachnoid alcoholic injections offers a useful means for the permanent relief of intractable peripheral pain. By keeping in touch with these new developments the anæsthetist is becoming more than ever a specialist in the prevention and relief of pain.

Since the day Queen Victoria put her seal of approval on Sir James Y. Simpson's chloroform, attempts have continued to find the ideal obstetrical anæsthetic. Chloroform is still widely used and is satisfactory when one wants "just a few whiffs" to "take the edge off" the pains, but it is too dangerous to be used as a complete and long-continued anæsthetic. The once prevalent idea that chloroform is safer in obstetrics than in general surgery has no basis in pharmacology. Indeed, this poisonous substance when given in a considerable dose to a parturient woman already toxic and exhausted may be just the added last straw which will tip the scales against recovery. At present we have nothing better for delivery and repair than nitrous oxide-oxygen. It is safe for both mother and child, it does not diminish the force or frequency of uterine contractions, and it helps the average patient to cooperate in voluntary efforts. If the gas-oxygen does not give sufficient relaxation for the actual moment of instrumental delivery a little ether or chloroform is easily added. I am sure that many mothers are ready to bless the obstetrician who will take enough interest in the relief of their pain to provide for them properly administered gas-oxygen anæsthesia. Expense to the patient need not be an obstacle, for this has been greatly reduced. But for a first labour we often need something to give relief during the long hours before gas-oxygen can be effectively administered. In our Montreal hospitals we have found heroin in re-

peated small doses to be fairly satisfactory. It should not be given, however, when delivery is imminent, owing to its depressing effect on the respiratory centre of the infant.

Professor Irving, of Harvard, has recently conducted a clinical investigation into the comparative efficiency of various drugs to relieve first-stage pain. In his judgment pentobarbital sodium (nembutal), used in adequate doses of 4½ to 6 grains every 3 or 4 hours, gave the most satisfactory results, judged from the standpoint of freedom from harmful effect on the baby and amnesia for the mother. Nitrous oxide-oxygen was used for the actual delivery in all Dr. Irving's cases. Others are equally enthusiastic about rectal ether-quinine and oil for obstetrical analgesia. Whichever method is used I think should depend on the circumstances of the individual case, but I would like to urge, for the sake of suffering women in childbirth, a more widespread interest by obstetricians in the possibilities and achievements of good anæsthesia.

I wish I had time to tell you of all the fruitful research work which is now being carried on in many places both as regards the condition of patients who are undergoing anæsthesia and the new anæsthetic drugs. Prof. Klotz, of Toronto, has recently told us why we should beware of inhalation anæsthetics for patients who have been the subject of chronic fibrosing broncho-pneumonia. Wesley Bourne, of McGill, has contributed further pharmacological and clinical studies of avertin. Some years ago Henderson and Lucas, of Toronto, introduced the gas, cyclopropane, as a non-toxic anæsthetic agent. This year, for the first time, Ralph Waters and his associates in Madison are making extensive clinical tests of this gas. There is also a new drug called "di-vinyl ether" which is being studied by Ravden, of the University of Pennsylvania. It gives promise of proving to be a convenient, powerful, pleasant anæsthetic.

If this paper has served any purpose I hope it has demonstrated the manifold aspects of modern anæsthesia. The anæsthetist should be first of all a physician with special interest in internal medicine, a man of sympathetic insight into the patient's psychology, and above all be endowed with a little common sense. To me it seems obvious that none but a properly trained medical graduate can possess these qualifications, and that we would not be serving the best interest of our patients to allow nurses to administer our anæsthetics. Nurse anæsthetists were introduced into many American hospitals principally for mercenary reasons and when anæsthesia followed a simple routine procedure, but each year their shortcomings as compared with physician anæsthetists are becoming more apparent. Throughout the British Empire the administration of anæsthetics has always been considered as a special part of the practice of medicine, and the standards of British anæsthesia are the highest in the world. At present there are not enough trained anæsthetists to supply all the hospitals of Canada, but I am sure that it would be to the advantage of even the smallest hospitals to have one member of the staff competent in this field. He need not give all his time to anæsthesia, but the hospital should see that he is assured of sufficient financial return to make anæsthesia his first interest. There are many "odd jobs" about a hospital which an anæsthetist is particularly fitted to perform, such as oxygen therapy, resuscitation of accident cases and the new-born, blood transfusion, electrocardiology, and metabolism tests. I think every anæsthetist should be in active touch with the medical wards and clinics of his hospital in order that he may remain familiar with the whole course of disease.

In closing I would like to add just a word in tribute to the one who perhaps has done more than anyone else in the world to stimulate and to inspire anæsthetists, and to promote fruitful collaboration with the other branches of medical science. I refer to Dr. Frank McMechan, editor and secretary general of the International Anæsthesia Research Society. Fifteen years ago McMechan became hopelessly crippled with rheumatoid arthritis, and had to give up active practice. But he refused to be beaten, and with the help of his brave wife he then began his real life work in the interest of better anæsthesia. Confined to a wheel chair, he has travelled far and wide, organizing anæsthetists, and co-ordinating research in our specialty. His last visit to Canada was on a characteristic mission —the presentation of a tablet to the historic old Hôtel-Dieu of Montreal in memory of Charles LaRocque, pioneer French Canadian anæsthetist. Constantly racked with pain, and unable to move any of his joints, McMechan to-day remains an inspiring leader and our friend. He has kept burning the fires of idealism which must ever animate all true physicians in our work for humanity.

THE PRESENT STATUS OF GAS IN MODERN WARFARE*

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THE word "gas", hallowed by usage in its application to warfare, must be applied to:

1. A *true gas*, which for our purposes may be defined as a liquid under pressure that is vaporized at normal atmospheric temperature and pressure.

2. *A liquid at atmospheric pressure* that is vaporized to some extent, or broken into small particles by the explosion of the projectile by means of which it is disseminated, or which subsequently becomes vaporized by heat, solar or otherwise.

3. A *particulate toxic chemical*, disseminated as particles of toxic dust, which depend for their effectiveness on slow vaporization or the carrying power of currents of air.

Therefore, the word "gas" in the title of this paper ought to be replaced by "toxic chemicals", to include the foregoing.

The ideal chemical weapon is said to be one that is invisible, odourless, easily stocked, and capable of manufacture from readily available raw products, unaffected by weather conditions, pervious to any respirator, and of which the smallest amount would saturate the largest space to such a degree as to produce the desired effect. Whether such an infernal weapon is now available must be left to the chemists to say. All of the twenty odd chemicals tried during the World War missed this ideal in one or more ways.

Chemicals in the form of gas or combined with smoke, as weapons of warfare, take us at least as far back as 429 B.C., when in the third year of the Peloponnesian War, the city of Platæa failed to fall before all the weapons of the time. After several months of inconclusive besiegement, Archidamus, the local commander of the attacking forces resorted to faggots, pitch and sulphur. However, owing to unfavourable winds and heavy rains, this, too, was unsuccessful.

In attempting to find in history a single common reason for the use of chemical weapons of this type, it would seem that the purpose has been to a great extent that of terminating a condition of static warfare, thereby forcing the enemy to give battle and so conclude hostilities, since wars of the past appear to have been won or lost as a result of manœuvre. The first battle of Ypres being a stalemate, the winter and early spring having been passed in a state of entrenchment, it was doubtless apparent that on April 22, 1915, the time was ripe to resume open warfare, and where to better advantage, from the viewpoint of the Central Powers, than at the Ypres salient, where the British left flank joined the French Algerian and Territorial Divisions. As is known, it failed only as a result of fortuity on the one side and an insufficiency of reserves on the other, and so the deadlock continued. Present-day opinion does not restrict the use of chemical weapons upon armed forces alone, but appears to favour their use upon the civilian populations, with the object of destroying the national morale as well as the sources of the necessities of warfare.

Justification for the use of chemical weapons is neither within my province, nor am I capable of passing judgment. However, Prof. J. B. S. Haldane, in his booklet "Callinicus", presents a most convincing argument in their favour. He admits that chemicals such as chlorine and phosgene, which are officially classified as lung irritants, killed about 25 per cent of those who became casualties from them, and that these died after great suffering, but he also notes that from the chemical nature of this group and the adequacy of protection afforded by respirators "they are probably almost as obsolete as muzzle-loading cannon". On the other hand, diethyl-sulphide (known to us as "mustard gas"), for several reasons probably the most effective chemical of its type used during the Great War, killed less than one in forty and permanently disabled only about one in two hundred of casualties from that cause. Quoting from his own experience of having been buried, presumably by a shell, having been wounded, and in civilian life having been asphyxiated on several occasions to the extent of unconsciousness, he writes: "The pain and discomfort arising from the other experiences were utterly negligble to those produced by a good septic shell wound." Whether or not opposition to the use of chemical

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weapons in warfare is logical or mere prejudice, we must not forget that in Europe the replacement of the arrow, axe, sword and lance by gunpowder, in the 16th century, constrained the reputedly chivalrous Bayard to resort to practices scarcely in keeping with his unblemished past.

The probability of chemical weapons being used in a future war depends at least upon three factors:— (1) the power and efficacy of the League of Nations; (2) the sanctity of existing international conventions; (3) the future of warfare in general.

With regard to the first, we may yet see that organization functioning as a super-state, with the moral and, or, physical power to enforce its decrees as to the maintenance of peace. Lacking this barrier to a conflagration, hypothetically we may sustain our hopes against the use of chemical weapons by the existence of several international agreements, which we shall note briefly. In 1899 and subsequently, representatives of 26 nations signed at The Hague *The International Declaration, Respecting Asphyxiating Gases,* which repudiated the use of projectiles designed for the diffusion of asphyxiating or deleterious gases. In 1907, and subsequently, 30 nations signed *The International Convention Concerning the Laws and Customs of War on Land,* article 23 of which specifically forbids the employment of poison or poisoned weapons by belligerents. Finally, at The Washington Conference on the Limitation of Armaments in 1921, the subject of chemical warfare having been carefully studied by experts representing the five principal powers there assembled, they reported that "it is neither practicable to prohibit this form of weapon, nor possible to prevent, restrict or supervise research on poisonous gases or their production, since, after all, this form of weapon is a by-product of legitimate research." According to the last Manual of Military Law (1929), one notes that by article 5 of the *Treaty of Washington* of 1922, chemical warfare in all its forms was prohibited. This Treaty has not been ratified. It is also to be noted that in 1925 a Protocol was signed at Geneva by most of the civilized powers prohibiting the use of poison gases as well as bacteriological methods in warfare. This, too, has not been ratified. In the light of these pacts, and with the experiences of the more recent past, one is compelled unfortunately to accept these safeguards only in theory.

As to the future of warfare, again I cannot pretend to be an expert. To one who attempts to keep abreast with the illustrated weeklies, excluding naval warfare, the most impressive features seem to be the development of the aerial arm and the mechanisation of the land forces, both of which will probably tend to initiate and maintain a war of movement. If our notion as to the purpose of chemical weapons has any truth in it, then it is possible that this type of action may not foster the use of such chemicals. While infantry, no doubt, will have its uses in defense and the occupation of hostile territory, and maybe the ultimate decision of battles, one visualises heavily armed, rapidly moving, armoured vehicles with self-contained ventilation systems capable of filtering out noxious chemicals, thus leaving the decision of battles to the preponderance of fire, internal combustion engines, and a limited number of highly trained technical personnel. The importance of the aerial arm in a future war, insofar as our subject is concerned, leaves much to the imagination. The accurate and effective "laying of chemical eggs" over an important centre of population on the part of enemy aircraft assumes the impossibility of adequate defensive measures (which, I believe, is not admitted) and a complete state of unpreparedness on the part of the civil population.

As recently as February of 1932 it was stated in a broadcast from Geneva that the Russian concept was that in time of war civilian and soldier must be looked upon as combatants. While this may not meet with your approval, this point of view under present conditions is indisputable. A small news item recently noted, that France was providing for fifty million gas masks with canister replacements capable of ten hours' continuous use, implies, to say the least, the acceptance of this principle by the greatest military power in Europe. An article in the *Révue Internationale de la Croix Rouge* of a year ago describes a most enlightening three-day defensive exercise carried out in the neighbourhood of Königsburg in October, 1930, against an aerial chemical attack. This scheme shows a recognition of the prevailing situation, and as a whole served to demonstrate how effectively the civil population, with reasonable equipment and warning, may be trained and organized for

their own protection against chemical attack. The foregoing isolated illustrations leave one with the conviction that the civil population furnish the most vulnerable link in the chain of national defense, particularly in view of the post-war revulsion against anything suggestive of military training. In the face of such possibilities it seems timely to suggest that we in Canada are inclined to underestimate the value of such training, even to the soldier.

The tactical advantages attained by the use of chemical weapons may be listed for practical purposes as follows:—

1. The infliction of casualties, which assumes a lack of equipment, training and foresight which to a considerable extent may be avoided.

2. The reduction of efficiency of troops incident upon the functional limitations of protective equipment, part of which may be prevented by improved apparatus and the training of troops in the use of such.

3. The production of temporarily untenable ground, which incidentally limits both belligerents, and, finally,

4. The dangerous loss of morale, influenced probably by a constant anticipation and horror of an unknown chemical weapon. This situation can to some extent be relieved by the knowledge of the very definite limitations of this form of warfare, fair warning, and a consciousness that efficient defense anticipates what the enemy has in his Pandora's box.

These factors, you will appreciate, concern only the effects upon trained military personnel. It may be imagined, then, what the effect of such weapons will be upon undisciplined civilians, unacquainted with any individual or collective measures of protection. The ignorance of these being what it is to-day, it is some consolation to know that a clause in the Covenant of the League of Nations provides "an interval of six plus three months, up to and after the international verdict upon any dispute likely to be a cause of war." This would therefore seem to allow for some period of precautionary training, so avoiding the catastrophe of an early attack upon a totally unprepared people. This seems so unnaturally Utopian that it scarcely appears safe to depend upon such a sporting fashion of declaring war.

I have had occasion in the preparation of this paper to read, possibly not fully, but extensively, some authoritative books upon the Great War, as well as certain reviews on the less accessible of similar books. It is my personal impression that after the initial surprise of chlorine at the commencement of the Second Battle of Ypres, none of the major reverses to the Allied Armies in the west could be placed to the credit of chemical weapons. In fact, the astonishing feature, to me, is that so little is made of this weapon by post-war writers. The results of an enquiry by the Interparliamentary Union, to which military men and university professors of nine different nationalities recently contributed on various aspects of modern warfare, leaves one with the suspicion that the cards are by no means all on the table. Nevertheless, there are certain points of general agreement, most of the 18 contributors conceding that, pacts to the contrary, with the outbreak of war chemical weapons will be used; also that, lacking an early decision, civilian centres of population will be subject to incendiary bombing and chemical attacks. This being the situation, it may be of some interest to know that our kinsmen who are concerned with the great problems of imperial defense maintain what is known as the Government Experimental Station at Porton, near Salisbury, in England, where defence against chemical weapons is studied as exhaustively as is possible with the restrictions imposed as a result of the post-war financial stringency and the prevailing gestures towards international amity. Certain of the officers and non-commissioned officers of our permanent active militia have received anti-gas training since the war, but how much further this training has gone, I do not know. Such training as has reached the non-permanent medical personnel in this garrison, in consequence of the limitations of time, finances and equipment, is left to the very concise official manual, an occasional and superficial lecture, and the imagination. In the event of our becoming involved in another catastrophe, we doubtless may anticipate a war in which civilian and soldier will share the hazards to a greater degree than formerly.

What does this mean to us, professionally, whether we are the one or the other? We have no control over the weapons used. We have, however, an interest in the protection of our patients, if not ourselves, from chemical weapons as well as a duty to sufferers from their effects. It seems apparent that a Section of a medical organization, such as this, is in an excellent

position to establish a liaison with organized industrial and research chemists, in order that we may know something more than we now do of these products of "legitimate research", which have the potentialities of weapons of warfare. We have it, on the authority of a book that I have already quoted, that a reserve officer of the Chemical Warfare Service is attached to every factory of the Chemical Industries in the United States. This means that chemical research, while not necessarily directed towards the discovery of the ideal chemical weapon by our neighbours, is contributing to their knowledge in that direction.

It thus seems reasonable, in the light of expert opinion, to think that a future war will be one of nations, not alone of professional soldiers and adventurous youth, and as such we must consider the medical profession of this country as a potential body of reserve medical officers. As far as the limitations of my contacts are concerned we show woefully little interest in what the future may hold in this direction. Many of those who have seen service feel that they have contributed all that should be expected of them; those who did not, as a rule do not appear to have even a negative interest. Unratified pacts and protocols offer little prohibitory effect to the use of chemical weapons of warfare, should the League of Nations not maintain its seat in the saddle. We are part of a peaceable, if somewhat impoverished, Empire, but space has shrunken in the last decade or so to such an extent that the oceans that once separated this continent from armed Europe and the turbulent East are little better than ditches. Surely it behoves us, then, in some way to maintain contact at least with the preventive aspects of harmful chemicals that may be used against us, casualties from which we may reasonably expect to treat.

I have said nothing about the new chemicals that might be used, partly because space is at a premium, but chiefly because, not being a chemist, I do not know. Ignorance of these naturally excludes any statements with reference to methods of protection not already known to you. It has been stated in a very recent paper on this subject, that, despite considerable research, no new toxic or lethal gases have been discovered, and that the present trend is to seek new methods for the dispersal of the already known toxic chemicals, rather than new substances. This sounds reassuring, but personally, in my ignorance, I doubt that the chemists have reached their limit. If I have persuaded you that chemical weapons are not yet banned from modern warfare, that civilian as well as soldier must be trained in the use of the available protective appliances if they are to be of any service to them, and that we as a profession should have a more intimate appreciation of what may face us, I shall have accomplished my purpose.

Case Reports

FIBROMA OF THE MAXILLA RESEMBLING A DENTIGEROUS CYST AND INVOLVING THE MAXILLARY ANTRUM*

BY J. W. GERRIE, B.A., D.D.S., M.D., C.M.,

Montreal

History. — S.S., female, aged 13, presented herself with a painless swelling of the left cheek which had been noticed since four years of age. From the outdoor clinic records of the case it appeared that at six years of age she was brought to the attention of the Children's Clinic where, aside from the facial asymmetry, a hard swelling of the gum was noted about the left upper molar region and the question of epulis was raised. The deciduous molars were in position and carious. Roentgenograms showed normally developing bicuspid germs, with the first permanent molar apparently retarded and a space between it and the bicuspids. The child was referred through the Surgical and Otolaryngological Clinics and then to the Dental Clinic for extraction of the carious milk molars.

The next record appeared a year and a half later at the age of eight, when a diagnosis of delayed eruption of the first permanent molar was made by the dental clinic. Roentgenograms showed the tooth in fair position, close to the bicuspids but not yet broken through the gum. Incision was made and soft tissue removed down

* From the Ear, Nose and Throat Clinic of the Montreal General Hospital, with permission of George E. Hodge, Otolaryngologist-in-Chief.

to the offending tooth crown, yet it failed to erupt and during the course of the next year both the first and second molars were removed surgically, together with considerable adjacent bone. In 1930, at the age of ten, she was admitted to the western division of the Montreal General Hospital for removal of a hæmangioma of the scalp. The facial condition was apparently the same, and roentgenograms showed absence of the first and second molars, with the third and rudimentary fourth developing in close proximity to the antral floor. Two years later, at the age of twelve, she was examined at the Surgical Clinic, as she showed no improvement. There was atrophy of the temporal, buccinator and masseter muscles, with puffiness and slight droop of the left lower eyelid and corner of the mouth. Dental opinion obtained at that time was that the teeth played no causative factor in the deformity, but the Neurological Clinic believed that the condition was surgical, depending on the unerupted molars and bony changes in the left upper jaw. Roentgenograms showed no further development of the unerupted teeth. It was concluded that the deformity was due to muscular wasting and that when the child was matured it might be possible to do a plastic elevation of the buccal fascia, attaching it to the malar bone.

The mother stated that she had noted no appreciable change in the swelling during the past six years. The child was seen in consultation with the dental department on January 18, 1933, and was then admitted to the Otolaryngology service.

Physical findings.—There was a flabby, puffy thickness of the left cheek with some drooping and loss of tone of the lower eyelid and left corner of the mouth. The anterior parts of the left temporal and masseter muscles were flaccid, underdeveloped and contracting feebly. The nose showed nothing abnormal. The upper left molar teeth were absent, and on inspection the alveolar ridge appeared normal, but on palpation was soft and flabby, there being no bony framework posterior to the bicuspids. That is, there was definite loss of alveolar and tuberosity bone, giving the impression that only soft tissue was present between this part of the mouth and the antrum.

Antral and dental roentgenograms revealed a definitely cloudy left antrum and apparently impacted third and supernumerary fourth molars lying high in relation to the antral floor. Diagnostic antral puncture produced frank pus. Lipiodol was injected into the left antrum and the roentgenogram (Fig. 1) showed a marked filling-defect in the antrum, but nothing resembling a cystic structure could be made out. In an effort to prove or disprove the presence of a dentigerous cyst, three hypodermic needles were passed in different directions through the

FIG. 1.—Lateral roentgenogram with lipiodol in the left maxillary antrum, showing filling defects and the third and rudimentary fourth molars in relation to the antral floor posteriorly.

suspected area. No fluid was encountered and in every direction the needles met first tough fibrous tissue and then bone or tooth structure. Roentgenograms were taken with the needles in position but revealed no further information.

Differential diagnosis.—Chronic antral suppuration and antral polyposis had been positively diagnosed. Impacted third and probably rudimentary fourth molars were present. Sarcoma was obviously excluded by the long-standing history. Because of the presence of dental anomalies in the child's mouth, the roentgenograms showing impacted upper cuspids, and the remaining three third molars developing as if impaction were imminent, it was felt that some developmental anomaly was present in the left upper jaw, associated with the two impacted teeth. A dentigerous cyst associated with the rudimentary fourth molar seemed the logical conclusion. However, needle puncture had ruled

out the presence of any cystic fluid and the area felt fibrous to the touch. Because of the previous operative procedures in this region, it was thought that post-operative healing processes might have modified a cystic structure if present. With the positive diagnosis of the jaw condition still in question and intervention into the antral condition indicated, it was decided to do a radical antrotomy and surgical exploration of the alveolar area.

Operation.—A left Caldwel-Luc antrotomy was done. An impacted cuspid lay in the line of the canine fossa incision and was removed.

FIG. 2.—Specimen removed at operation. Below is the unerupted cuspid, and above the fibroma with third and rudimentary fourth molars on its upper aspect.

The antrum contained free pus and was markedly polypoidal. The third and fourth molar tooth roots were found, covered by a thin layer of bone, projecting about three-sixteenths of an inch into the antrum. They were not disturbed from the antral side. The Caldwel-Luc incision was extended backwards, downwards, and medialwards over the suspected alveolar area. Immediately a white, hard fibrous structure came into view. Separating with some difficulty, it was dissected back and found to be associated with the crowns and necks of the impacted teeth. The teeth were pried loose from their bony sockets, and the tumour and teeth were removed *en masse*. The bony tuberosity was completely gone. Profuse bleeding occurred in the pterygo-maxillary fossa, and was controlled with gauze pressure. The tumour cavity was packed with iodoform gauze brought out far back in the alveolar area, and the Caldwel-Luc part of the incision was closed. Antral packing was brought out through the usual intranasal opening.

Examination of the specimen (Fig. 2) showed the crowns of a normal third and rudimentary fourth molars embedded in the tumour mass by pressure only. Section showed hard white fibrous whorls, which, microscopically, were of a fibrous nature only, the whole growth being enclosed in a definite capsule.

Marked post-operative swelling and nasal discharge were present. Eventually the nasal condition cleared and the tumour cavity granulated in. However there has been so far no appreciable change in the facial asymmetry, the cheek remaining puffy and flabby in spite of some three months' massage and exercise under supervision of the physiotherapy clinic.

COMMENT

It would appear that the growth began at an early age as a fibrous epulis originating from the periosteum in relation to the alveolus of the temporary molars. This delayed the eruption of the first and second molars, and when they were removed part of the fibrous growth was brought away with them. The tumour remains continued to grow, further impacting the third and supernumerary fourth molars. Although the antral condition may have been coincident, yet it is probable that pressure irritation of the antral mucosa started the polypoidal process. The underdevelopment of the masseter and anterior temporal muscles might be explained by prolonged pressure involvement of the anterior deep temporal and pterygoid branches of the third division of the trigeminal nerve. The thick, flabby condition of the cheek would be a chronic lymphatic œdema, the result of circulatory involvement in the sphenomaxillary fissure and the drooping of the eyelid and the corner of the mouth a result of this thickening.

PREGNANCY WITH BILATERAL CONGENITAL CYSTIC KIDNEYS*

BY J. LLOYD BURNS,

Department of Obstetrics and Gynæcology at Toronto East General Hospital, Toronto

The case to be reported recently came under my attention in the wards of Toronto East Gen-

* Read before the Section of Obstetrics and Gynæcology, Academy of Medicine, Toronto, March 23, 1933.

eral Hospital. These cases of congenital cystic kidneys occur about once in 600 autopsies, according to Ball and Evans, but some pathologists think they occur more frequently. They occur more often among women, so it is not surprising that one occasionally finds a case associated with pregnancy. Numbers of cases are found at autopsy in persons under five years of age and few from that till the age of thirty; from that to fifty years there are a number, and few, if any, exceed that age.

They have been found in family groups, that is, in several members of one family, and in succeeding generations, so frequently as to establish the congenital nature of the ailment. They are usually bilateral.

The cysts are multiple and may be few or many, so that the kidneys may appear normal, except for a few small cysts, or there may be so many marble-sized cysts as to resemble a bunch of grapes and obscure any likeness to a kidney. Normal kidney substance is distributed between the cysts. Other organs such as the liver may be cystic. The cysts are lined with epithelium and contain a clear watery fluid, or this may be clouded. Virchow thought the cysts were due to inflammatory changes in the papillæ with closure of the ducts, but experimental blocking of the tubules results in atrophy of the tubules and not to cyst formation. Brigidi and Severi believed the condition was due to degeneration of the epithelial nests, forming cysts. Hildebrand pointed out that the cortex and the major portion of the medulla of the kidney arises from the Wolffian body while the collecting tubules of the kidney arise from the Wolffian ducts, and failure of normal union of these parts in the embryo causes the cyst formation.

CASE REPORT

On October 12, 1932, Mrs. O. was admitted to the obstetric ward at 2.05 p.m. She had been seen by a neighbour at 1 p.m. in a convulsion. Another convulsion occurred while she was being put to bed at 2.15. She was treated by the Stroganoff method, and only a partial examination was undertaken, so as not to precipitate further convulsions. Our findings were as follows: Accentuation of the second sound of the heart-beat; blood pressure 240/130; uterus about full term (it was reported to us afterwards that she was 8 months pregnant); fetal heart sounds heard; a very full and tense abdomen; vaginal examination showed a two finger dilatation of a soft cervix; uterine contractions were not in evidence.

At 6 p.m. the fetus was expelled. There was no difficulty in establishing respiration of the child, and the baby was later discharged from the hospital in good health.

October 13, 1932, the day following admission to hospital, the patient was roused from a mixture of sleep and stupor with little difficulty. She spoke quite rationally, reminding me of having treated her family before she married. The heart and lungs were found to be normal except for accentuation of the second sound. Her blood pressure was 120/100. Fourteen ounces of urine were obtained by catheter and the nurse reported the passing of urine involuntarily.

I was pleased with her condition for the following reasons. No sedatives had been given for 15 hours; there were no convulsions after treatment was commenced; the uterus was empty; her mental condition was improving; the flow of urine had been re-established; the blood pressure had come down. Unfavourable indications however were involuntary movements and incontinence of urine, and that evening she became weaker and comatose, with rapid pulse, and passed away on the morning of her third day in hospital.

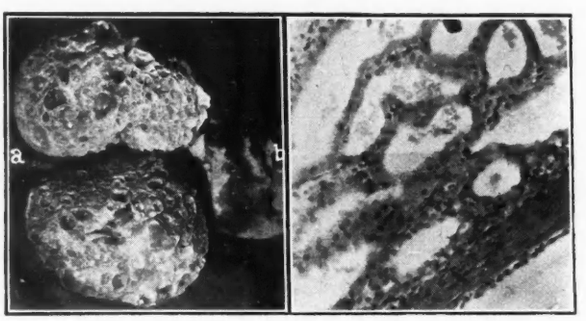


FIG. 1 FIG. 2

FIG. 1.—(*a*) Kidneys with capsules removed. Cysts show plainly but are shrunken. (*b*) A small section of liver showing gray and red areas giving geographical appearance.

FIG. 2.—Photomicrograph of kidneys. The smaller spaces are dilated but nearly normal tubules. On the surface a large cyst is seen showing the flattened character of the cells which line the cysts.

An autopsy was performed, and the following is a summary of the report: bilateral congenital cystic kidneys; eclampsia, indicated by typical geographic liver on section; general anasarca; ascites; hydropericardium; hydrothorax; petechial hæmorrhages into the lungs and heart;

post-parturient uterus; congestion of the spleen.

The family history in this case was interesting. The patient's father was alive and well; her mother died at 43 of kidney trouble. She had had 3 brothers die of "kidney disease," but no details were obtainable. One sister died of pulmonary tuberculosis, and there were one sister and one brother alive and well. X-rays of these two showed normal-sized kidneys. There were twins also, who died in infancy, one at four days, and the other at seven months.

The mother, Mrs. M., aged 43, had been a patient of mine. She had taken a convulsion which I decided was uræmic, and sent her to the hospital where she died on March 22, 1926. The autopsy showed bilateral congenital cystic kidneys; cysts in the liver; œdema of the lungs; chronic endocarditis; hypertrophy and dilatation of the heart; hypostatic congestion; arteriosclerosis; petechial hæmorrhages in the stomach.

The following note had been made on her case.

"Both kidneys were of tremendous size, and on external examination no remnant of secreting tissue could be recognized. It is remarkable that the individual suffered so little inconvenience from such a tremendous change in her kidneys. The development of hypertension and uræmia were undoubtedly associated with the diminished amount of active kidney substance."

Again in the case of the sister, Mrs. S., who died of tuberculosis, autopsy revealed bilateral congenital cystic kidneys. She died at the Mountain Sanatorium in Hamilton, on May 6, 1931.

Thus all deaths in the family of Mrs. M., have had this condition as an incident circumstance, or as a direct cause of death.

The x-ray findings in the cases of the surviving members of the family are not conclusive. They indicate normal healthy kidneys, but a nearly normal kidney with a few small cysts would have a similar appearance. However they do show that there is no advanced cystic condition of the kidneys.

Prenatal care might have averted the eclampsia, and might have averted death at this early age. The handling of these cases consists in the usual prenatal care, coupled with the usual prophylaxis of chronic interstitral nephritis.

I would like to express my appreciation for the assistance of those associated with me in this case: to Dr. L. O. C. Skeeles for valuable advice in consultation; Dr. Geo. Laughlin for his work on the pathology of the case; Dr. A. McGee, Radiologist; and Dr. Wilfred Christie. Also, I am indebted to the Toronto General Hospital for the history of the case of Mrs. M., and to Dr. J. H. Holbrook, Superintendent of the Mountain Sanatorium at Hamilton, for the case-history of Mrs. S.

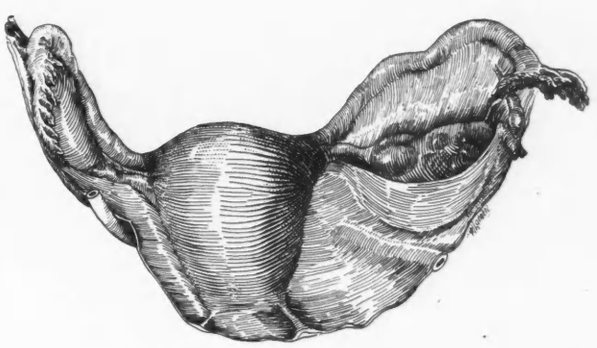
HERNIA OF THE OVARY AND FALLOPIAN TUBE INTO THE BROAD LIGAMENT

By T. W. A. Gray and D. M. Baillie,

Victoria, B.C.

The following case report is of interest on account of the unusual character of the lesion, which was only revealed at operation.

The patient, an unmarried woman aged 25, came under observation in August, 1932, complaining of pain for the last five years, referred to the right iliac fossa and dating from an appendectomy. The latter had been performed for an acute attack of pain; since this operation her abdominal pain had been of a different character, being intermittent, varying in intensity, aggravated by fatigue and menstruation, and



referred down to the right groin. The pain caused nausea and occasional vomiting.

During childhood her health had been good, except for a characteristic history of juvenile rheumatism.

Physical examination was essentially negative, apart from evidence of a compensated mitral regurgitation and a healthy right rectus scar. There was definite tenderness on deep pressure slightly above and to the right of the pubic bone. There was no zone of hyperæsthesia and the obturator test was negative. Rectal examination showed an area of tenderness high up in the right fornix, the right ovary being palpable and extremely sensitive. The urine was negative and no evidence of local infection

was found even with repeated examinations of cervical and urethral swabs. A tentative diagnosis of adhesions in the ileo-cæcal angle was made, and in view of the prolonged history and disabling character of the pain an exploratory laparotomy was performed on September 9, 1932, at the Royal Jubilee Hospital, Victoria.

Through a low median incision the lower abdomen and pelvis were carefully explored. The ovaries were small and cystic, but, as there were no other apparent lesions, we were at a loss to account for the symptomatology. On tilting the uterus well forward with a sponge-holder, a space, about 5 cm. long and 5 cm. deep, presented itself in the right broad ligament immediately below the right ovarian ligament. Into this congenital sac the ovary and distal portion of the tube readily prolapsed. There was a band of peritoneum from the side wall of the pelvis over the lower lateral portion of the cæcum, and attached to the posterior surface of the peritoneum over the pouch. The ovary and tube were not firmly held, but apparently were in the sac and outside of it, depending on the distention of the cæcum and the consequent pull on the band. The fluid from the small cysts of the ovary was aspirated with a hypodermic needle, and the walls approximated with mattress sutures. The hernial sac was obliterated by a running suture of chromic catgut.

From the literature it appears that 13 cases of herniation of the small intestine into the broad ligament have been reported. At the Staff Meeting of the Mayo Clinic, May 10, 1933, J. C. Masson and Walter Atkinson reported a case very similar to the above, in which the ovary and end of the Fallopian tube were incarcerated in the hernial sac.

In our case the ovary was not firmly held, but was apparently squeezed by the band attached to the cæcum and side wall of the pelvis. There is little doubt that this internal hernia and consequent prolapse of the ovary accounted for the vague symptoms of which the patient complained, as there has been complete subjective recovery since the operation.

Clinical and Laboratory Notes

THE TREATMENT OF VARICOSE VEINS

BY F. B. BOWMAN, M.B., F.R.C.P.(C.),

Hamilton

The injection treatment of varicose veins has been used for 100 years, but only since 1925 has it become popular, and since then the literature has been filled with articles extolling different solutions, but all agreeing that the treatment is much more satisfactory than surgical interference.

Like many office treatments where the general practitioner is dependent more or less on the proprietary drug houses for his materials the injection treatment of varicose veins has become a commonplace procedure. In fact, when one reads the literature sent broadcast over the country by some of these companies one would think that the injection of varicose veins could be performed by the patient himself. When done properly on selected cases there is probably no office treatment more satisfactory to both doctor and patient than the injection treatment of varicose veins. Like other valuable clinical methods, however, this operation has fallen into disrepute in many quarters because over-zealous advertisers have persuaded inexperienced operators that the treatment simply consists of "a shot in the vein" using the solution put up in ampoules by their firms. After several years' experience in this work the writer has become convinced that the results are not always so satisfactory and the procedure so simple as some would have us believe. For this reason a few remarks on the treatment will now be opportune.

It is a simple matter to neglect taking a careful history of a patient presenting himself with enlarged veins of the leg. It would seem a simple matter to pick up an ampoule and inject the solution into the vein, without any questions being asked or any examination made. It is most important to eliminate the possibility of any latent infection. A devitalized, chemically inflamed vein is an ideal situation for the extension of, say, a tonsillar infection. Following influenza no injections should be made until the patient is in good health. If the patient has had phlebitis within six months no injection should be made and some prefer waiting even longer than that. In pregnancy up to the fifth month veins may be safely injected, but not with any solutions containing quinine or any of its derivatives. Age is no contraindication in my experience. In general one wishes to emphasize the fact that these injections should not be given without some serious thought on the part of the operator.

As regards solutions. The writer has used the following in the past seven years, sodium chlo-

ride, sodium chloride and glucose, solium salicylate, a mixture of sodium chloride, sodium salicylate and glucose, sodium morrhuate, quinine-urethane, and lithium salicylate. All of these substances in solution will obliterate vessels in certain cases. Sodium chloride and sodium salicylate have been very successful in my hands. Sodium morrhuate has not been satisfactory; although the veins seemed to be obliterated they usually became recanalized, requiring more treatment. The only advantage in the use of sodium morrhuate is that it is less irritating if it escapes into the surrounding tissues. Any solution escaping into the tissues demonstrates that the operator is either careless or lacks training in the technique of intravenous medication. Quinine-urethane I only use in treating small hair veins for the cosmetic effect. On several occasions very alarming reactions have occurred following the injection of only 1 or 2 c.c. of 5 per cent quinine-urethane solution. Whether this is due to any idiosyncrasy or to the formation of minute emboli one is unable to say. When a drop of blood is dropped into a solution of quinine-urethane it immediately turns into a fine brick-dust suspension. Other solutions mentioned, I have found, do not react in this way. Maingot[1] reports the use of "lithocaine" in his clinic at the Royal Waterloo Hospital. There it has been used since 1926 and 3,000 cases are seen yearly. They had no bad reactions and the results have been excellent. Lithocaine is a 25 per cent solution of lithium salicylate in water, with 1 per cent tutocaine added. His results appeared to be so satisfactory that one year ago I began using it and have so far had excellent results. I prepare the solution by adding the lithium to 50 per cent sterile glucose solution, and think this is better than Maingot's solution. I usually prefer not to add the tutocaine, as the cramp is never unbearable, and I am of the opinion that it gives one an idea as to the distribution of the solution. Sometimes an injection with either tutocaine or novocaine leaves the patient for a few minutes with what he describes as a "peculiar feeling." Other advantages are its cheapness and the ease with which it may be sterilized. From two to five c.c. may be injected at one sitting depending on the size of the vein. As solutions of lithium are more or less unstable if kept in glass containing any iron salts they should not be used when they have turned brown. A solution usually lasts about two weeks.

There are certain patients who seem never to react to any solution. Everyone has seen them. They have flabby muscles, bruise easily, and have enormous tortuous veins. Maingot in these cases recommends what he calls a twin injection. If a solution of quinine-urethane is mixed with a solution of lithium salicylate a thick whitish gummy substance results. In other words the two drugs are incompatible and this principle has been used in treating the type of vein described above. Two operators are necessary. One syringe is loaded with 2 c.c. of quinine-urethane solution, and the other with 4 c.c. of lithium salicylate. One operator plunges the needle into one extremity of the large varicosity and the other plunges his needle into the other end and both inject simultaneously. A very severe cramp results, but in one case at least an enormous vein was occluded when every other solution was absolutely inert.

REFERENCE

1. MAINGOT, *Practitioner*, 1932, **129**: 174.

A NEW METHOD FOR THE DETECTION AND ESTIMATION OF MINUTE AMOUNTS OF LEAD IN BIOLOGICAL MATERIALS*

PRELIMINARY REPORT ON RECOVERY OF LEAD FROM CASES OF LEAD POISONING

BY JOHN R. ROSS AND COLIN C. LUCAS,

Toronto

Following the recognition of a case of lead poisoning which presented itself in March, 1933, it was decided to attempt to apply the spot test reagent diphenyl-thiocarbazone (dithizone) to the detection and estimation of lead in urine and other biological material. This has been successfully done by the following procedure.

The urine is treated with $(NH_4)\ H_2PO_4$, and strong ammonia, and the precipitate of mixed phosphates in which the lead is completely entrained is centrifuged off. The precipitate is dissolved in normal hydrochloric acid and the lead precipitated by H_2S and centrifuged with entrainment on a small amount of filter paper fibre. After digestion with perchloric acid, to destroy organic material (urates, etc.), normal sodium hydroxide is added until the precipitate which forms just redissolves. Ammonium acetate is then added and the lead is again precipitated as the sulphide and removed by centrifuging, after adding a little filter paper pulp. To the solution of the lead sulphide in warm dilute acid, ammonia is added till mildly alkaline, and then 1 c.c. of dithizone solution in carbon tetrachloride and 5 drops of 20 per cent sodium cyanide. By repeated extraction in a separating funnel the lead is completely removed from the solution and appears as the

* Abstract of a paper read before the Toronto Biochemical Society at Guelph, October 26, 1933.

From the Department of Medical Research, Banting Institute, University of Toronto; and the Nutritional Research Laboratories, Department of Pædiatrics, University of Toronto and the Hospital for Sick Children, under the direction of Alan Brown, M.D.

red salt of dithizone in the carbon tetrachloride. The depth of the colour is proportional to the amount of lead present, and by comparison with known standards made up in a similar way its strength is determined. At present the method is being adapted for use in the Duboscq colorimeter. The cherry-red lead dithizone solution in carbon tetrachloride may either be read in the colorimeter directly or may be converted back to the green dithizone by washing with hydrochloric acid and read in this form.* Before proceeding with the test it is very important to remove all traces of lead from glassware, and to test all reagents used for the presence of lead, as many so-called "chemically pure" reagents were found to contain lead.

Using the above procedure the presence of minute amounts of lead has been detected in the urine of several normal persons. Specimens of urine from battery workers have shown in some cases considerable amounts of lead, even though they have had no clinical symptoms of lead poisoning. Amounts of lead up to 21 γ per cent† have been found in the urine of infants suffering from acute lead poisoning. The spinal fluid in two cases of lead encephalitis had a considerably higher content of lead (up to 60 γ per cent). In one of these cases the intestine showed 23 γ per cent, the kidney 50 γ per cent, the brain 87 γ per cent, and the liver 1.5 mg. per cent. We have found that the lowest limit of lead detection by this method is 0.1 γ, or 0.0001 mg. This compares favourably with the spectrographic method. Various workers claim that the limits of lead detection spectrographically range between 0.001 and 0.00001 mg. according to the type of instrument used and the care taken in the procedure.

The authors wish to thank Dr. F. G. Banting for his interest and cooperation in this study, and also Dr. E. J. King for suggesting the use of the spot test reagent dithizone and other assistance throughout the experiments. The specimens of urine from battery workers were obtained through the kind cooperation of Dr. C. A. Wells.

* After the above procedure had been evolved and the experiments practically completed, our attention was drawn to an article by H. Bohnenkamp and W. Linneweh (*Deutsches Archiv. f. klin. Med.*, 1933, **175**: 157), in which a method utilizing dithizone, but considerably different in procedure from the above, is described for detecting lead in urine.

† = 0.001 mg.

REAGENT FACILITATING THE FORMATION OF HÆMIN CRYSTALS FROM BLOOD

This reagent is made by dissolving 1 g. of crystallized magnesium chloride in 1 g. of water, adding 5 g. of glycerol (30 per cent), and then 20 g. of glacial acetic acid, and mixing; it keeps unchanged in a corked vessel. A small quantity of residue, obtained by evaporating the hæmoglobin solution, is treated with a drop of the reagent and covered with a microscope cover-glass. To examine blood which has dried on material from which it cannot be completely detached, a fine particle is transferred to a slide and a drop of the reagent is added. The preparation is warmed for a few seconds over a small flame. Microscopic examination then usually reveals crystals of hæmin, the number of these increasing if the slide is again heated. Dried blood gradually swells under the action of the reagent, and the first hæmin crystals appear in the outside layers.—G. Bertrand, *Ann. Chim. Anal.*, 1932, p. 353, through *Analyst*, 1932, p. 664. Abs. in *J. of State Med.*, 1933, **41**: 116.

ALLERGY AND INFECTION. PRACTICAL VALUE OF CYTOLOGIC EXAMINATION OF THE NASAL SMEAR IN DIFFERENTIAL DIAGNOSIS

The clinical differentiation between allergic and infectious rhinitis is not always obvious. The existence of an eosinophilia in the smear of the nasal secretions of the allergic cases is characteristic enough to be diagnostic. If the secretions are collected during a period of activity, and only when the patient had a natural desire to evacuate them, the average uncomplicated case of hay-fever gives a smear eosinophilia of from 40 to 90 per cent. Of 154 cases examined, all those with an eosinophilia of over 5 per cent were subsequently proved to be allergic in origin, and in no case which proved to be infectious without concomitant allergy was an eosinophilia found. The secretions may be collected at home in a cellophane handkerchief, and if kept sealed in a jar will remain suitable for examination for several hours. Thin smears are dried, fixed by heat and stained with Wright's stain.—Kahn, I. S. and Stout, B. F., in *J. Am. M. Ass.*, 1932, **99**: 1494.

Editorial

MEDICAL RELIEF

PERHAPS no one problem has engaged the attention of so many members of the medical profession in Canada as has the problem of medical relief, particularly during the past year or more. The term medical relief requires interpretation. It means, in my judgment, the provision of adequate medical care for persons on relief and their dependents, and should further mean the provision of this care in a manner which does not impose a hardship upon the purveyors of that care, namely, the medical profession. The question, too, has given rise to a certain amount of misunderstanding within the profession. There are a number of physicians to whom the term Medical Relief suggests State Medicine, Health Insurance, etc., etc. It should be clearly understood by all concerned that medical relief during the present national emergency means just what it says and no more, namely, the provision of medical care for those who ordinarily provide this care for themselves, but at the present time are unable to do so. It is most important that we do not accept the abnormal condition as something upon which we must base a solution for normal conditions.

The Good Book says, "The poor we have always with us", and perhaps no one is better qualified to vouch for the accuracy of that statement than is the medical profession. It has been traditional for the profession throughout the long years to care for the poor without hope of gain or reward. But again we must insist, even risking the danger of over emphasis and repetition, that medical relief is not a term applicable to the "normal poor", if one may be permitted to use such an appellation.

The Government of Canada, to its credit, accepted the responsibility of providing funds to the several provinces of Canada to be used for general relief purposes during the present emergency. It should be pointed out that the Federal Government was under no legal obligation to do any such thing. The British North America Act makes this point very clear, and it is well that we should all understand this as a basis for what follows. The Federal Government felt it to be a moral obligation to assist the provinces, and with that end in view has contributed a great many millions of dollars during the past three years. In handing over sums of money to nine administrative bodies, it did not seem unreasonable that the Federal Government should set up a policy or a set of rules governing the expenditure of this money, and, therefore, it was laid down that, upon the presentation of the proper vouchers from the respective provinces, the Federal Treasury would reimburse the provinces to the extent of one-third of the cost incurred in providing food, fuel, shelter and clothing. Just here it should be interpolated that, while the Federal Government set up those four main conditions of expenditure in which it would participate, it did not say at any time that these four obligations in any sense represented the entire obligation of a provincial government to its people.

Acting on behalf of the Provincial Medical Associations of Canada, the Canadian Medical Association made representations to the Right Honourable the Prime Minister of Canada that medical care was just as important for a family on relief as food, fuel, shelter and clothing. The Prime Minister of Canada did not take issue with this contention, but, on the contrary, agreed with your representatives that such was the case. He further stated that because the Federal Government had not included medical care in the list of expenditures to which it would contribute it could not be argued fairly that the Government had placed any prohibition against the suggested supplying of medical care by the provinces. Indeed, the Prime Minister in no uncertain terms told your delegation that it was the duty of every provincial government in Canada to provide medical care, and again he pointed to the British North America Act as the determining factor in this. He further stated that the medical profession should not be asked to

carry the entire burden and provide the necessary medical care but that they should be paid in whole or in part for their services.

It was the privilege of the General Secretary to consult with six of the nine provincial governments of Canada, and to obtain from each of these six governments a definite statement to the effect that medical care should be provided persons on relief, and that the medical profession should be paid for their services. Tacit agreement to this statement may be said to have been forthcoming from two of the remaining three provinces. One province, through its Medical Association, disclaimed all interest in the problem. No advice was received from the government of that particular province. From the foregoing facts, it would seem that the following statements are correct:—

1. Governmental authority in Canada, nationally and provincially, approves of medical care being included in relief provisions.
2. Constituted authority believes that the medical profession should not be asked to provide this care gratuitously.
3. Organized medicine across Canada has stated its position to be decidedly in favour of the medical profession being paid for services rendered to relief cases.

Now, with these facts established, where does the matter rest at the moment. Only one province in Canada has, at this writing, accepted its responsibility with regard to medical relief. One year ago, the Government of the Province of Ontario announced that it would contribute two-thirds of the cost of medical care, while the municipality concerned paid the remaining third of the cost. In a number of municipalities, the plan has been put into effect and is working satisfactorily. In a great many municipalities in that Province nothing has yet been done, because these municipalities have refused to accept the Government's offer, for the reason that they refuse to provide one-third of the cost.

The other provinces, through their respective governments, have, up to the present, taken refuge by saying that unless and until the Federal Government provided one-third of the cost of medical care they could not undertake this additional responsibility. The Prime Minister of Canada says, in reply to the provinces, "Go ahead; assume your rightful responsibility and in the case of those provinces which cannot afford to undertake this additional burden, the Federal Government will be willing to come to their aid with additional funds". Therefore, it is now strictly up to the provincial authorities to institute across Canada the necessary machinery to relieve the medical profession from a burden which, in many instances, has become too great for the doctor to carry. It will likely be found, however, in all of the provinces, just as it has been found in Ontario, that the court of final jurisdiction, namely, the municipal government, can block the whole scheme by declining to accept the offer of its government for funds to pay the doctor. This again would appear to be a legal right which the municipality enjoys as one further heirloom from the British North America Act. Just how each municipality will be compelled to recognize its responsibility, legally, morally and honourably, yet remains to be worked out. The most important court of all, namely, public opinion, can solve that problem and, indeed, one feels quite confident that, if the public were asked to decide the matter, the answer would be speedily and unmistakably given in favour of payment being made for services rendered.

One should not leave this subject without saying a word in regard to the future. It would be most unwise to deal with the present emergency as anything but an emergency. It should be clearly understood that the activities of organized medicine in connection with this problem are not to be construed as having any bearing upon a policy of medical services for normal times. Much has been said and written of recent years in regard to State Medicine and Health Insurance, and, unquestionably, there is a great deal of ambiguity and confusion in both the minds of the medical profession and the public as to the meaning of these terms. The medical profession prides itself in this fundamental of its structure, namely, that adequate treatment cannot be suggested until an accurate diagnosis has been made. As yet, the Canadian Medical Association with the information before it, has not made a diagnosis of the problem of medical care in a manner satisfactory to all the people, and, therefore, is not prepared at this time

to offer any cure by way of a plan. We are engaged, through our Committee on Economics, in studying the problem in all its ramifications, and, in due season, the report of the Committee will be made available. Meanwhile, it is well for the profession in Canada to thoroughly understand and appreciate that, while we are observing a policy of watchful waiting and intelligent study, we are not making any attempt, nationally or provincially, to steer the profession or the public into a plan which neither the profession nor the public may find satisfactory. There are many amongst us who argue that the medical profession should of itself evolve a plan for State Medicine or Health Insurance; that such a plan is long overdue; that, if we do not evolve a plan, the public will do it for us. In the opinion of the writer, there is no necessity for the profession to be panicky or uneasy in regard to these contentions. At the same time, common sense would dictate that it behoves us to receive and appraise in an unprejudiced manner any suggestions which are offered from this or any other country dealing with the distribution of medical services.

The Canadian Medical Association, with a history dating back to Confederation, may be trusted to safeguard the interests of the people whom it serves and the profession of which it is constituted in a manner in keeping with the highest ideals and traditions of this young nation of which we are all so proud.

T. C. ROUTLEY.

VITAL STATISTICS OF CANADA: 1932

THE Preliminary Report, Vital Statistics of Canada, 1932, has been published by the Dominion Bureau of Statistics. This report contains a mass of material in the form of tables, which is of interest to the medical profession. The birth rate of Canada has fallen consistently during recent years, reaching its lowest rate of 22.4 in 1932. This is true of all provinces, with the exception of the Maritimes, where the rates for 1932 are above the average of recent years. There were 2,807 twins and 18 triplets born in 1932. The percentage of illegitimate births has increased slightly, while that of the still-births is practically constant.

The infant death rate for 1932 is 73.2, the lowest rate on record, and, for the first time, the rate for every province is below 100. The Province of Quebec is highest, with 94.2, and British Columbia is lowest, with 46.8. These rates indicate a satisfactory health condition in so far as mortality is concerned, and there is not, as yet, any evidence as to any ill effects of the depression on the lives of infants. More infants die in September than in any other month; this is accounted for by the 2,840 deaths from diarrhœa and enteritis, a large percentage of which occur in September. Prematurity was responsible for 3,957 of the 17,219 infant deaths and comes first as a cause of infant mortality.

A maternal death rate of 5.0 per 1,000 live births is another lowest rate on record. The fact that the rate was below the average of recent years in all provinces suggests that the reduction is significant and represents a real gain in this field which had failed to record progress for many years. Abortion is a major contributing factor to maternal mortality. Out of 1,180 maternal deaths, abortion is given as the cause in 152. Septicæmia remains first on the list, however, having been responsible for 282 deaths.

The general mortality rate of 9.9 per thousand population is the lowest rate ever recorded. The age-distribution of the population influences this rate considerably and partially accounts for our finding the Western provinces with the lowest rate, and the Maritimes with the highest. With a falling birth-rate, the time is not far distant when the changing age of the population will be reflected in a rise in the general death rate. That many Canadians attain a good age is shown by the 4,264 deaths, ages 85-89; 1,546, ages 90-94 years; 413, ages 95-99; and 64, 100 years and over.

The table of deaths from certain specified causes shows that, out of a total of 104,190 deaths, diseases of the heart were responsible for 15,320; cancer, 10,014; tuberculosis, 7,103; pneumonia, 7,024; and nephritis, 5,631. The deaths from the communicable diseases were comparatively few; typhoid fever, with 336

deaths, of which 204 occurred in Quebec, indicates the widespread application of sanitary measures to water and milk supplies. British Columbia had 16 out of the 17 smallpox deaths, the penalty for neglecting vaccination. The campaign against diphtheria is showing results, but nevertheless, 398 deaths are recorded from diphtheria.

Deaths from appendicitis continue to increase, and in 1932, 1,453 deaths are recorded from this disease. There were 6,629 deaths from violence, of which number 1,021 were suicides and 1,602 from traffic accidents. Of the latter, 1,116 were automobile fatalities.

The record for 1932 is a satisfactory one. We have been fortunate in that we have escaped any widespread epidemic. Whether or not the national health is being affected by the depression we do not know, but there is no evidence in the mortality tables to indicate that such is the case. We would not expect to find that evidence so soon, because it will take years for the effects to show themselves. Further, most of the ill results will be seen, not in the death rates but in lower standards of personal physical and mental health for which we have no measure.

The 1932 preliminary report makes its appearance in a new and satisfactory form. The table showing, by provinces, deaths from cancer, classified according to site, is one of real value which must be studied to bs appreciated. The special tables for cities and towns allow for instructive comparison which should cause some questioning of the public health organizations in certain communities.

The value of provincial co-operation to secure national vital statistics is seen in this report, and the Bureau of Statistics are to be congratulated upon their promptness in getting out this annual review.

G. F.

Editorial Comments

The New Clinico-Pathological Museum of the University of Manitoba Medical School

A remarkable departure in teaching museums has just been instituted at the Winnipeg Medical School under the direction of Professor William Boyd, assisted by an enthusiastic band of medical students. In it the principle of correlation of pathological specimens with the etiological clinical and historical data bearing upon and pertinent to a given case or condition, as first presented by Sir Jonathan Hutchinson in his great "Clinical Museum"[1], and carried out in our own day on a magnificent scale in the Wellcome Museum of Medical Science[2] at London, has been applied with singular success. This has been done by means of a novel method of installation which places both the material and its catalogues in readily accessible form at the level of the eye of the observer, so that "he who runs may read." It is the old "Library Museum" idea carried out in an original and highly spectacular fashion and with a degree of convenience to the student not, we believe, previously achieved.

An essential feature of the new arrangement has been the use of the watchglass method for pathological specimens, practically all the new material being so mounted, while most of the old collection has been removed from the old museum jars, cut down to show the lesion, and similarly enclosed under the convex glasses so employed. This form of mounting has made possible the introduction of a new type of display-stands, made after the pattern of magazine racks in a library. These almost entirely replace the familiar upright cases formerly in use, which have been largely discarded, only a few being retained for large specimens or others which do not lend themselves to watchglass treatment. In their places are now seen shining rows of low white desk-shaped stands, within the sloping interior of which are exhibited, each under their special sections, the distinctive pathological lesions, and, grouped in close juxtaposition with these, pictorial and other matter illustrating the clinical aspects and historical evolution of the disease-concept in each unit of the display.

Here we find, in the words of an eye-witness, coloured pictures of gross specimens from pathological atlases mounted under old x-ray plates and passe-partouted; plates from Christeller's Atlas of microscopic sections through whole organs similarly mounted; pictures of clinical types, such as those in Byrom Bramwell's Clinical Atlas, and pictures and photographs taken from life in the wards, illustrating gaits and postures characteristic of certain nervous diseases and the symptomatology of other disorders; x-ray negative prints showing pathognomonic appearances such as lipiodol in bronchiectasis, carcinoma of the pylorus, etc.;

1. The Clinical Museum: an Explanatory Address, by Jonathan Hutchinson, *Brit. M. J.*, 1893, **2**: 1295.
2. The Medical Museum. Based on A New System of Visual Teaching, by S. H. Daukes. The Wellcome Foundation Ltd., London, W.C.1, 1929.

electrocardiographic and other tracings; temperature charts, etc. All these are not grouped together in a single pictorial exhibit,[3] but are interspersed among the pathological lesions to which they are related. Last, but not least, as a crowning touch which lends vitality and inspiration to the whole, Dr. Boyd has placed, and is placing in their respective sections, portraits of the Masters of Medicine, living as well as dead, whose names are forever associated with the delineation or the treatment of disease in their particular field. Here we find such men as Bright, Addison, Hodgkin; and already, to our delight, the portraits of Ewing, Muir, Warthin, Cushing and Penfield. And to each is attached a short biography for the permanent enlightenment and refreshment of the student mind.

But the unique part of the whole arrangement, and in a sense its most useful and significant feature, is the mode of presentment of the catalogue of the material. For this purpose large cards are used for each pathological specimen which carry a brief description of this and a statement of the salient points in its clinical history, and usually show on the reverse side a microphotograph of the lesion it presents. These cards are encased each in a celluloid cover and are kept in a container or rack attached to the lower part of the display stand, which is sufficiently spacious to accommodate additional cards descriptive of the other material on the stand above it as well as a card giving a short account of the subject illustrated, with its more important bibliography. Under these circumstances, and by this concentration of all objective data and theoretical information in a single unit, the student is enabled to seat himself comfortably before the subject of his study and diligently familiarize himself with all aspects of the condition under his observation. This is the way of direct knowledge and the right incentive to individual personal research. *Sic itur ad astra!*

There is another side to Dr. Boyd's achievement that may well be stressed here. In the reorganization of his museum as a clinico-pathological teaching unit he has worked entirely with volunteer assistance, and has by his own ingenuity and effort, at a very trifling cost, attained a result that is comparable with and on the same plane, though on a smaller scale, as that arrived at by the great institutions mentioned above through the generous outlay of large funds derived from philanthropic sources. At this time of financial depression under which the University of Manitoba has suffered much, it is good to learn that a member of her Medical Faculty out of his own intellectual resources has been able to render such a noble and noteworthy contribution to the teaching forces of that School. M.E.A.

3. See The Clinical Picture Gallery in Medical Education, by C. O. Hawthorne, *Post-Grad. M. J.*, September, 1933.

The Detection and Estimation of Minute Amounts of Lead in Biological Materials

The attention of clinical laboratory workers is specially directed to an article by Drs. John R. Ross and Colin C. Lucas under the above caption, which appears in this issue of the *Journal* in the section of "Clinical and Laboratory Notes." The method these workers have devised is reasonably simple, not beyond the powers of the ordinary clinical technician, and, taking the precautions they mention, is apparently very delicate and at the same time reliable. The final determination is made by a colour comparison, using the Duboscq colorimeter. During the past year or so increased interest has been taken in the subject of lead poisoning, and we are beginning to realize that this condition is more common than we have suspected, and, further, that many persons, apparently normal, are excreting measurable amounts of lead. The significance of this is probably considerable. We may ask ourselves, for example, how far "masked" plumbism is responsible for general arteriosclerosis and chronic nephritis. This is a matter that calls for investigation. Lead poisoning in infants and young children, we find also, is by no means rare. A number of cases have been studied recently at The Children's Memorial Hospital, Montreal, under Dr. Harold Cushing, and we have already given some space to this matter in the pages of the *Journal* (1933, **28**: 196 and 207). Any improvement in the methods used for the detection of lead in the urine and fæces, which hitherto have been somewhat cumbersome, will be welcomed. A.G.N.

The Canadian Medical Protective Association

We have before us the thirty-second annual report of the Canadian Medical Protective Association, of which Dr. R. W. Powell is president and Dr. J. Fenton Argue, of Ottawa, secretary-treasurer. It gives a record of good work well done. During the year twenty-seven actions were threatened or brought against members of the Association; these are classified as follows:—actions threatened but not yet proceeded with, 4; actions commenced and still pending, 10; actions brought before the commencement of the year still pending, 1; actions discontinued by plaintiff, 3; actions dismissed with costs, 5; actions awarding damages and costs against a member, but successfully reversed upon appeal, 2; actions appealed by plaintiff and appeal dismissed, 1; judgment against a member for the act of his employee, 1. Four cases involved burning in connection with radio-therapy and four were concerned with the use of or failure to use x-ray for the purpose of diagnosis.

Some paragraphs from the report of the General Counsel, Mr. F. H. Chrysler, K.C., are

worth quoting here as they bring forward points of great importance to the medical profession.

"The earlier cases in which the Association has assisted in defences were usually limited to allegations of negligence either in regard to the treatment of the patient or to lack of skill in the performance of an operation. The modern tendency of claimants is to charge the defendant physician not only with negligence but also with assault, misrepresentation and fraud, breach of contract, negligence of employees, and any other cause or action which may occur to Counsel astute in framing a complicated and expensive action on behalf of his client.

"Many of these complications are due to the developments which have taken place in the resources of the medical profession. The use of x-ray and the fluoroscope for the purpose of diagnosis, radiotherapy, the consultation of specialists, and the increased use of private clinics and of hospital facilities have resulted in multiplying the number of persons concerned in the treatment of a patient.

"It is therefore advisable for physicians or surgeons, no matter how skilful, to take care that they do not become involved in the negligence or default of others.

"The undertaking of the Association only extends to assisting a member when, in the opinion of the Executive Committee, he personally is wrongly charged with malpractice, but the modern practice of interweaving, in a statement of claim, a multiplicity of allegations, has necessitated expensive preliminary proceedings in the Courts to determine who the proper defendant is, and what he is specifically charged with."

Some important changes have been made in the by-laws of the Association. Chief among these are the following.

Old by-law No. two is repealed and the following is substituted: "Every member of the profession duly licensed in any province in Canada shall be eligible for membership in the Association and upon becoming a member thereof shall be entitled to its assistance and protection."

Old by-laws Nos. four and five are repealed and the following is substituted: "Members of the Canadian Medical Association, or affiliated Provincial Medical Associations, may become members of the Canadian Medical Protective Association on their own application and upon payment of the annual dues. Other duly licensed practitioners applying for membership in the Association must be nominated and seconded by two practitioners who are already members of this Association, and the qualifications for membership in the Canadian Medical Association shall be the basis for membership in the Canadian Medical Protective Association."

New by-law No. seventeen reads as follows: "The Association reserves the right to discontinue to assist in such defence and in any subsequent proceedings relating thereto should it appear at any time to the Executive Committee that the action can no longer be defended."

Old by-law No. eighteen is repealed and the following is substituted: "In assisting in the defence of an action against one of its members the Association undertakes, subject to these by-laws, to pay the taxable party and party costs of his defence reasonable and properly incurred along with reasonable and proper witness fees and counsel fees to be settled by the General Counsel of the Association, and such costs shall be paid out of the funds of the Association. If in any such case a verdict awarding damages or costs shall be given against such member the Executive Committee in its discretion may assist in any appeal from such verdict to a higher court, or, subject to these by-laws, shall assume payment of the damages and costs so awarded."

New by-law No. nineteen reads as follows: "The Association will not assume payment of damages or costs and is not liable in any action in which an adverse verdict is given by reason of evidence which establishes that the damage, or any part thereof, was caused by the act, default, negligence, error or mistake of any person other than the defendant member; or by the member having been under the influence of intoxicants, anæsthetics or narcotics; or by the member acting in violation of any statute, law or ordinance, or in the commission of any criminal act or act with criminal intent."

The President, in his report, places the membership of the Association at rather more than twenty-four hundred, but expresses the hope that this figure may be doubled. This is highly desirable in view of the greatly increased call upon the funds of the Association. Last year the expenses arising out of legal proceedings amounted to $4,129.15 and this year they totalled $12,300. In view of the fact that the total income from membership fees amounted to $12,107.50, of which sum $2.00 per member has to be set aside for the Indemnity Account, it will be seen that the need of the Association is urgent. We take pleasure in again commending the work of the Canadian Medical Protective Association, and would urge the wisdom of every medical man becoming a member. This is a form of insurance that is well worth while. It is true that few of us expect to be assailed and dragged through the Courts, with all the publicity and anxiety entailed, but if we are fortunate enough to escape we at least can have the satisfaction of helping a brother who may be in dire need of assistance. The membership fee is $5.00 and the protection is well worth it. Don't delay. When you need the Medical Protective Association you will need it badly.

A.G.N.

A Medical Art Calendar

Medicine has primarily to do with the body — the microcosm, but it has many contacts with the outside world — the macrocosm. It has its roots in the past, and its branches eagerly reach forth to the future. But the study of the body cannot be separated from the study of the mind and soul. For that reason, properly studied and properly understood, medicine will be found to have close relationship with religion, literature, art, and music. In short, medicine may be rightly regarded as one of the "humanities." It is a bridge between the human and the divine. With this thought to the fore we welcome the appearance of an old friend — The Medical Art Calendar, published by J. Philip Kruseman, of The Hague. This highly artistic and pleasing production has been appearing for the past fifteen years, and the Calendar for 1934 is in no way inferior to its predecessors. It contains twenty-six reproductions of paintings and drawings, mostly of the Dutch and Flemish Schools. Besides portraits and subjects having a literary or historical connotation there are a number of those delightful *genre* pictures which the artists of the Low Countries knew so well

how to paint. Among the artists represented are Van Helmont, Gerard Dou, David Teniers, Rembrandt, Laquy, Delfos, Van Scorel, J. A. Kruseman, Karel Dujardin, and Isaac Van Ostade. Several operations in minor surgery and dentistry are depicted; there are medical consultations; there is the familiar urinoscopy. Specially noteworthy, perhaps, are The Young Mother, by Gerard Dou; David playing before Saul, by Rembrandt; The Good Samaritan, by Van Scorel; The Urine Doctor, by Dou; and St. Peter healing the Sick, by Dujardin. The reproductions are excellently well done. The Calendar can be commended to the attention of all members of our profession who are interested in the "gentler" aspects of our art. In fact, all of us might profit from its study. It can be obtained from the publisher at the very reasonable price of $1.50, post free. An album is also being prepared in which the pictures may be collected; its price is 75 cents (3/6).

A.G.N.

Special Articles

STERILIZATION OF THE FEEBLE-MINDED

BY E. C. MENZIES,

Verdun Protestant Hospital,

Verdun, Que.

The communications on race preservation by the Hon. Dr. Bruce and Dr. Cornwall, respectively published in the September and October numbers of the *Canadian Medical Association Journal,* provoke reflection.

Dr. Bruce assumes *a priori* that in the great majority of people showing mental trouble the hereditary factor is the principal cause of the condition. He also tacitly assumes that we have no means of successfully treating these conditions. Hence his logical deduction that the only way to solve the problem is to sterilize those who possess this weak heredity. Dr. Cornwall's letter implies that in only a certain type, *viz.*, the feeble-minded, is heredity the principal cause, the other types for the most part being generated by deplorable social and economic conditions. He argues that the only way to save our race is to remedy these pernicious conditions; further, he states that in the types in which heredity does play a part, sterilization would be of little avail, since the hereditary factors being recessive must lie dormant in many people. He gives the percentage as ten to fourteen; hence, even if we sterilized all the feeble-minded it would take over two hundred years to reduce this concealed heredity by even half.

It is on these conflicting views that I have set myself to comment.

I am no more than a dilettante in anthropology and archæology, yet even a dilettante in these sciences may perceive, dimly, it is true, but still with a fair degree of confidence, primitive man struggling upward from his bestial beginnings, learning with infinite toil through many long millenia a partial control of his surroundings, and finally evolving the great early civilizations. Archæology sheds as yet but a feeble light on these ancient attempts of man to live in great communities and to form laws and customs whereby an enduring social structure might be raised, within whose shelter he and his posterity might safely continue the age-old struggle to subdue the forces of nature. We know but little of these old civilizations, but one fact stands out in bold relief—none of them endured for long. Some, it is true, apparently lasted for thousands of years, but this span, great as it seems, is relatively short when compared with palæolithic time. It seems to be a proven fact that so far civilization has spelled the doom of every ethnic stock that has tried it. Why this doom descended is not so clear; the sociologist, the economist, the moralist, the eugenist, all try to explain it from their different points of view.

I think we can safely go so far as to say that man, in common with all forms of life, developed under certain immutable laws of nature. While he was still in a primitive state he had no choice but to conform; his very lack of control over natural forces caused his destruction if he did otherwise. As soon as he established civilized communities, however, he was able to break these laws with apparent immunity, but, inevitably, the fixed laws of life prevailed and the race that violated them deteriorated and perished. What these laws of progress are may be open to question; what we shall do to conform to them is still more debatable; but I believe one thing at least is true, that Nature does demand the survival of the fittest and that in a primitive state the unfit are weeded out,

> "So careful of the type she seems
> So careless of the single life."

The reader will perceive that I have taken much space to enunciate the simple proposition that the reason civilizations go down is because a cultured society, in defiance of an age-old law, protects and guards its unfit members.

It may be remarked that the term "unfit" does not mean the old, the suffering or the poor. Any civilization worthy of its name can always take care of these, while many of our poor are of more value to the state than some of our financiers. Also, this proposition does not mean

a glorification of war; it does not imply the ruthless destruction of the weak. Indeed war inevitably means destruction of the strong. It is the fit in mind and body who are exterminated. Meanwhile, in both victorious and vanquished countries the unfit have been carefully guarded and saved to perpetuate the race. History teems with the records of victorious nations so weakened by wars of conquest that they fell almost in the moment of triumph.

I do not blame anyone who recoils from accepting in its entirety the above statement; I cannot accept all its implications myself. Are we as doctors to feel that every time we save a puny child, every time we save a pregnancy from unfit parents, we are contributing to our racial downfall? The answer to this dilemma is of course the simple one that our knowledge of the facts of heredity, our knowledge of what factors make for racial betterment, is still very defective, and that if we, in our present state of blindness, rushed into this field of almost unknown, moral, ethical and physical factors we should do more harm than good. Personally, I am thankful to say that the above reflection solves most of the questions which arise in the ordinary course of practice. But in the problem raised by Dr. Bruce's paper I am not so sure that we can apply it and retain our intellectual integrity.

Dr. Bruce uses the terms feeble-minded, insane, defective, degenerate, etc., as if they were synonymous. This, of course, is not so. In one type of case the trouble, broadly speaking, is due to a lack of intellect; in the other type we have people of normal, sometimes above-normal intellect, the trouble here being due, seemingly, to emotional and instinctive instability, and it is this latter class who constitute our major problem. They, not the idiots, are the ones who fill our asylums; they, not the idiots, are the ones, who, kept at home, destroy the peace of many a family; they are the ones who marry and have numerous offspring, who in turn crowd not only our asylums but also, as nervous and neurotic patients, our general hospital beds and throng our outdoor clinics. They are also the ones who, subject to mass hysteria, make us sometimes wonder whether democracy can be successful. I am being thus pedantic with a reason. Not many people will deny that idiocy is hereditary, but there is a very strong and influential school of psychiatrists who maintain that this major class, these so-called "psychogenic cases", are in large part not hereditary. Dr. Cornwall gives one reason for their existence, *viz.*, economic conditions. I do not think that many psychiatrists, even among those who maintain the non-importance of heredity, will follow him here. The most of them feel that other factors, such as unwise bringing-up, early emotional stresses and strains, etc., are the chief causes; they feel that poor economic conditions are only of importance as they contribute to these strains, and that even this contribution is not great, since very often wealth on the part of parents may be the very reason why the child, from a psychiatric standpoint, has been poorly brought up. Whatever the reason given, however, it is true that many psychiatrists do not believe that heredity is of much importance in this large group of cases, and hence will say that the means advocated by Dr. Bruce will not solve the problems presented in by far the greater number of the unfit. As a psychiatrist, I am naturally inclined to accept the view that heredity is not important in a great majority of the cases mentioned by him. If I cannot accept this view it means, in effect, that everything I do is merely palliative, and that with every case I return to active life I return a source of danger to unborn generations. Again, for obvious reasons, none of us in active mental work stresses heredity to either relatives or patients, and there is always a temptation to allow this tendency to influence our beliefs and judgments. This is not the place to discuss the pros and cons of heredity in mental trouble. Speaking as it were *ex cathedra*, I can only say that with each succeeding year I am more and more impressed with the importance of heredity, not only among the feeble-minded but among the truly insane, *i.e.*, the emotional or psychogenic types. True we get many cases in which no history of family weakness is given, but it is also true that we have a very large percentage in which a history *is* given. I have moreover become deeply impressed of late years with the number of cases in which a negative history was at first given, but which later are found to have a positive heredity. Sometimes the family themselves did not know; in other cases they consciously prevaricated; and in many others they used the same mechanisms as the patients, succeeding in blinding themselves to obvious facts. Again, the longer acquaintance one has with the immediate relatives the more he is impressed with the fact that some of them, while having no history of admittance to an asylum, yet exhibit many of the characteristics of the committed individual.

I am aware that statistics, obtained mainly from asylum records, give quite a large percentage of patients in whom no history of insanity in their ancestry is shown. But the reasons outlined above have made me of late years doubt the accuracy of these figures. I feel that the actual percentage in which with more care a positive history could be obtained is much greater than a perusal of such figures might indicate.

It should be noted that the advocates of a non-hereditary basis make one other contention. They point out that even if an unstable mother brings up a child who in turn shows mental trouble, this fact does not *per se* prove that the

child inherited its mental weakness. Even if this be granted, I do not see how it can alter a practical view of the situation. Whether parents are unable to transmit a healthy emotional make-up to the child, or whether they are unable so to train it as to develop a sound personality, matters little. The fact remains that society would be stronger if such people had no children.

To refer more specifically to Dr. Cornwall's argument that economic conditions are responsible for mental trouble, I think that I am at one with the majority of my psychiatric brethren when I say that our experience does not support any such contention. These cases seem to happen regardless of the economic or social standing of the family. The members of a wealthy family break down just as frequently as do the offspring of poor parents. If this were not a fact we would not have so many doctors able to make a living in private psychiatric practice. I grant that not so many of this class make their appearance on our asylum rolls, but this simply means that their families are able to care for them in a less public manner.

It would follow from the above that I am forced to admit that Dr. Bruce's solution of the problem is a logical one. The objection that it would take too long does not seem to be valid. After all, it is not so much present conditions, bad enough as they are, that we are concerned about, but the almost absolute certainty that these conditions will become worse. Whether things will go to the extent predicted by Dr. Bruce in 75 years, or in 275 years, does not greatly matter; either period is relatively short in racial history. The unfortunate fact is that we all agree that the problem is at present increasing. Any banker will tell us that if our debt is increasing, with no likelihood of a halt in the increase taking place, we are headed toward bankruptcy, but that if we are holding our debts stationary or possibly reducing them somewhat, we may be able to remain solvent. I am afraid, however, that while sterilization is a logical solution, it is very far from being a practical one; public opinion is very far from accepting any wholesale method of compulsory sterilization; there are too many religious, moral and sentimental hurdles in the way.

In the meanwhile it seems to me that it is the duty of the medical profession to face this problem squarely. The profession has already, by the stand it has taken in the arrest of communicable diseases, to mention only one example, admitted that its duty is no longer solely to the individual patient, but that at times the liberty and rights of their patients must be curtailed in the interest of the community. So far the profession as a whole has not applied this principle of responsibility to the state as well as to the patient in the field of mental illnesses. Instead, they have left the whole subject pretty much in the hands of a few specialists. Some lead must be given to enable each doctor in his private practice to have some measure whereby he can evaluate his responsibility to the race as well as to his patient. Certainly the too-common attitude of pride in the fact that a highly nervous unstable mother, who may perhaps have been actually in an asylum, has been successfully carried through a pregnancy and "a fine baby born," should be replaced by one that is at least a little questioning.

Irrespective of our own opinions, our thanks are due to both Dr. Bruce and Dr. Cornwall for their timeliness in bringing this subject before the Canadian profession.

RECURRENT HERPES.—The prognosis of the average cases of herpes progenitalis is gloomy, and the distress of the unfortunate patient has occasionally resulted in suicide. Treatment, mainly directed hitherto to hygienic measures of a prophylactic kind before and after coitus, has been disappointing, and has rarely prevented the rhythmical return of the vesicular eruption. Some successes have been reported following x-ray irradiation, but this method has obvious dangers and cannot be repeated indefinitely. Levy-Franckel advocates "anti-shock" methods in the form of injections. The drugs used by him on 8 cases of recurrent herpes, 4 of which were of the progenitalis type, were eosinate of cæsium and trypan-blue. The former was injected in 6 per cent aqueous solution from 5 c.c. ampoules. The exact intervals are not stated, but may be assumed to have been about a week. The first patient, a man with herpes præputialis, had 15 injections of the cæsium compound, and had been free of the eruption for 11 months at the time of writing. The second case so treated was a woman of 32 with a catamenial herpes of the left cheek. This patient had 10 injections and remained free for 13 months, relapsing in February and March of this year. The third patient, a case of herpes præputialis, had 5 injections without much benefit, and is undergoing treatment by trypan-blue injections. This is given as a 1 per cent solution in sterile water, each dose being 1–2 c.c. Besides its relatively long retention this drug has the further advantage that extravenous leaks have no more serious effect than somewhat prolonged local staining of the skin. No constitutional complications are to be feared. The dye is not excreted either by the urine or fæces, but solely and very slowly by the skin. Staining of the conjunctiva resulted in one case from a single dose of 6 c.c. All the cases treated but one were favourably influenced and the rhythm of recurrence definitely interrupted. The method has the advantage of being easy to apply and free from danger.—*The Lancet*, 1933, **1**: 1031.

Medical Economics

RELIEF MEASURES IN WINNIPEG

BY E. S. MOORHEAD,
Winnipeg

Before the first of July, when the refusal of medical service to people on relief became effective, it was necessary to define "emergency." Certain factors had to be considered. The hospitals had been friendly to the profession throughout the movement. Whatever views they held about their out-patient clinics, they were anxious to keep as many beds as possible occupied. There was also the competition or rivalry between hospitals. If the definition were rigid, accusations of failure to live up to the agreement would soon appear. We might easily lose the support of the public if a patient died following the refusal of a doctor to attend, and the press would not hestitate to criticize us. The definition of emergency, "Disease or disability associated with possible death or prolonged disability, which might have been avoided or mitigated by skilled assistance," is liberal, very liberal, and appears to satisfy everybody. It is for temporary use. A new and much stricter definition can be substituted at any time. To judge by the absence of letters in the press on medical relief in June, critics of the doctors' movements were few.

The chairman of the civic relief commission was reported in the press to have stated, "I am inclined to sit back and see what happens. I believe the situation will smooth over in time. The refusal of the doctors to treat the unemployed may not be as serious as anticipated." From time to time he made announcements through the press and over the radio that a satisfactory medical service was being maintained. At this time, there were between 50,000 and 60,000 on relief in Greater Winnipeg. This included 7,000 families on unemployment relief, the single unemployed, and the wards of the social welfare department. The medical service was supplied by one whole-time medical officer and three private practitioners, paid by the visit and not employed very frequently. The services of a charitable nursing mission, most of whose staff consisted of under-graduate nurses in training, were utilized. One of the mission staff nurses was sent in response to a call from a house for medical assistance. The nurse made a provisional diagnosis and decided on the necessity of summoning the doctor. To judge by the frequent statements of patients arriving in hospital, she had for some time carried out the treatment which she had prescribed. It thus happened that a boy of sixteen was admitted to hospital two months after the onset of encephalitis lethargica, during most of which time he had had the services of a visiting nurse who scolded him for laziness. A man treated for ten days as a case of influenza was found to have advanced pneumonia when he entered the hospital.

Since the early Spring there has been cooperation through a liaison committee between the doctors and a committee representing the unemployed on relief. The latter felt that their aims and requests were similar to those of the doctors, *viz.*, adequate medical service and free choice of doctor. They supported the claim that there should be payment for those services. Once given the assurance that emergencies would not be neglected, they approved of the withdrawal of indiscriminate free service, even though it would entail some hardship for them. Parades were held by the unemployed at various times during the Summer to demand medical services. One such meeting resulted in a clash with the police, when tear gas was used, and several casualties were admitted to hospital.

Shortly after July 1st it was decided that venereal disease, which was being treated in out-patient departments and hospitals, should come under the same regulations as general illness, and that only those requiring hospitalization should be regarded as emergencies. The Provincial Government at once called for tenders for the operation of a clinic. Only one hospital tendered. Many meetings and discussions were held, the outcome of which was the following motion passed at a meeting of the joint committee on September 23rd:—

"THAT, in view of the total inadequacy of the governmental estimates for the provision of venereal treatment to the indigent in the Province of Manitoba for the year 1933-34, and recognizing the urgent and immediate need of thoroughly organized treatment, this committee agrees to the proposal of the Department of Health and Public Welfare to contract with the governing board of St. Boniface Hospital for the establishment of a venereal clinic to operate for the remainder of the governmental fiscal year, provided that:

1. "The medical director of said clinic shall be appointed by, and shall be directly responsible to, the Provincial Department of Health and Public Welfare, from which he shall receive direct and adequate remuneration for his services;
2. "The clinic shall be operated for the benefit of the indigent only, but including those on relief, and careful scrutiny shall be made of each applicant as to his or her indigency;
3. "The clinic shall be operated primarily as a public health preventive measure; and provided
4. "it is understood that this committee continues to affirm its principle of free choice of doctor to all patients on relief, and that this action shall not be construed a precedent, retracting in any degree from that principle, and that, further, this agreement shall be terminable at the end of the present governmental fiscal year."

The sum involved was approximately $10,000 per annum, of which the medical director was to receive $2,000. With one exception, the hospitals of Greater Winnipeg loyally supported the action of the doctors. The latter felt that to be successful they must not antagonize the public, that they must not embarrass the hospitals, and that they must seek the support of the press.

After July 1st, the hospital authorities segregated relief cases coming to the out-patient clinics. These appeared before a doctor for investigation as to emergency. Patients coming within that category were referred to the proper department. Others were returned to the municipal relief officer. One source of distress to the unemployed was the way in which the officials of the relief authorities passed them from one place to another. Many examples were reported of patients with venereal and other ailments spending all day seeking medical attention, each health or municipal official being anxious to get them off his hands by referring them elsewhere, though without any assurance of assistance. One hospital, a private corporation, refused to support the movement, and announced its willingness to receive all relief cases whether emergent or not. Of the honorary staff of thirteen, ten tendered their resignations, effective November 1, 1933.

Early in October, the Winnipeg General Hospital re-opened its out-patient clinic in a modified form. The following notice was issued:—

"At the request of the Medical Faculty of the University of Manitoba, the Board of Trustees of The Winnipeg General Hospital has placed certain facilities at the disposal of the Medical Faculty. Members of the Faculty, who are on the Hospital Staff, will conduct a limited Out-Patients' Consultation Clinic. The Medical Service will be, as formerly, entirely voluntary on the part of the Doctors in attendance.

"Patients will be admitted to the Clinic on presentation of a letter from a practising physician. Only those who are unable to pay physicians' fees and the rates for special examinations and treatments are eligible.

"Partial charges will be made to the patients for special services, such as the x-ray, laboratory, etc., where collectable, in an endeavour to cover the cost.

"When referring patients, please state:

1. "If you wish the patient returned to you with a report on the findings, or if it is your desire that the patient should remain in the Clinic for treatment.
2. "If the patient is able to contribute towards the cost of the examination or treatment.

"It is expected that this Consultation Out-Patients' Service will be in operation by October 2, 1933."

The medical profession accepted this gratefully, as a very valuable aid to the aims of the profession. Many English hospitals are now using various modifications of this method. If Canadian hospitals were to adopt it several abuses which have crept into use during recent years would disappear.

A short summary of the position of the doctors in Greater Winnipeg at this date might be useful. With the exception of single unemployed in camps, no payment is being made for medical services. The press has sympathized with our claims and supported them by numerous editorials and articles. There is no outspoken criticism on the part of the general public, and letters in that public forum, the columns of the press, are singularly few. Best of all, the profession is organized as never before. The numerous requests from practitioners for rulings and decisions by the executive on various problems show that they are prepared to play the game, and are giving the movement loyal support. Finally, the last move in the contest has not yet been made. More drastic action on the part of the profession is conceivable, but it must be justified before it can be taken. It is probable that the normal increase of illnesses during the Winter will force the issue.

THE ECONOMIC SITUATION IN SASKATCHEWAN

By Lillian A. Chase,

Regina

Most of the cities of Saskatchewan have conceded the right of the doctor to be paid for work done on relief cases. The city of Regina voted $20,000.00 in the 1932 budget. Some doctors do not render any accounts to the city. The highest amount paid to any one doctor in 1932 was $966.00. The city pays $1.50 for each house call on an indigent. The Medical Health Officer must be notified after the first visit and must sanction the doctor's attendance. Twenty dollars is paid for a maternity case in the home; ten dollars for one in the hospital. Operations and serious illnesses in the hospital are paid for at partial schedule fees, not more than fifty dollars being paid for any one case. The city pays nothing for office visits. Surgical operations must be emergencies; no indigent patient is admitted to the hospital for treatment of a chronic condition. Nothing is paid for tonsillectomies or for examining eyes for glasses. The eye, ear, nose and throat specialists are paid only for emergency mastoid operations and acute antrum operations.

In Saskatoon the doctor, after the first visit, reports the case to the Medical Health Officer. If the patient is indigent and needs medical care the doctor is given an order requesting him to render treatment, signed by the mayor, the Medical Health Officer, and the inspector. After the doctor receives this order he must render his bill for services rendered, except in surgical and maternity cases, at the end of seven days from the date of the order, and every seven days thereafter so long as he attends the patient under the order. Surgical cases are paid for

at the rate of 35 per cent of the schedule of fees authorized by the College of Physicians and Surgeons of Saskatchewan, up to the maximum of $50.00; for maternity cases in the home is paid $17.50, and $1.50 for house visits; medical and maternity cases in the hospital and office visits are not paid for. After the amount voted in the city estimates is spent, any doctor who has accepted an order requesting him to care for indigents agrees to continue caring for them, even if there is no money left to pay.

In Moose Jaw one doctor has been appointed to look after the indigents for $200.00 a month; for operative cases they pay the assistant a small fee. They offered the specialists 35 per cent of the rates laid down by the College of Physicians and Surgeons, but, as the men doing special work felt entitled to 50 per cent, a settlement has not yet been reached. While the indigents are supposed to go to the city appointee for care it is estimated that the medical men as a whole are looking after well over 50 per cent of the relief and indigent cases, because they like to look after their own old families, even if they have fallen on evil times.

In Weyburn $600.00 is divided equally among the four doctors there for care of any indigents who may present himself. About 600 people are on relief.

In Yorkton the doctors look after all the indigents for nothing, but the city does not ask any of them to pay a business tax. The business tax in Yorkton is about fourteen cents a square foot.

In North Battleford the city council pays nothing for treatment of indigents.

Reports from the country districts vary with the locality. Fifty-eight municipalities will need help. There are 562 organized municipalities in the province. The area needing complete relief is along the southern border, extending farther west and north than last year and another region about half way between Regina and Saskatoon.

Crops in the north-east area are good, that is, in the districts around Yorkton, Canora and Pelly. They have never had a crop failure in that region.

In Grenfell, a town which is situated in the south-east area, the town council refuses to pay for indigents. Where possible the doctors send the patients to the hospital and the town pays the hospital bill. In the rural district around Grenfell there is a fair crop and plenty of feed, but the attitude of the people has changed toward their obligations; they seem intent on avoiding payments if possible.

In the north-west, around Kindersley district, there is a crop failure and collections are below 10 per cent of the work done at the present time. Owing to poor tax-collection the municipalities are not in a position to undertake the payment of medical work, even if they were so inclined.

A letter from a clergyman in the northern area where the territory is unorganized gives the following information:—

> "The settlers have paid so little in taxes that the Department of Municipal Affairs is not attempting to provide hospital or medical services. When they write to the Department of Public Health they are told that inasmuch as they are living in unorganized territory they should communicate with the Department of Municipal Affairs. However, in special cases the Department of Public Health will authorize expenditures. The local doctor received $50.00 a month from December, 1932, to May, 1933. There are over 200 families on relief in an area served by only one doctor. No provision has been made for the supply of drugs; the Relief Officer issued a few vouchers to cover necessary drugs, but he was informed by higher authorities that he had nothing to do with drugs. Conditions, in general are appalling. This is to be the hardest winter we have had."

City councils, in general, seem to take a fair and reasonable view of the doctor's work, but the rural municipal councils do not share these views. For the most part, now, they will pay a hospital bill, but paying the doctor is something they are not prepared to do. Any doctor is very foolish who proceeds with the treatment of an indigent case without authorization in writing from the secretary-treasurer of the municipality.

Patients are becoming increasingly irresponsible about looking after their own illnesses. Recently the public health nurse asked a patient in the home what plans she had made regarding her confinement, "My husband is going down to Dr. Coles (the M.H.O.) to see what he is going to do about it." The indigents expect the city to provide them with medical and nursing care for the yearly baby, to supply layettes, later on, clothing from the community clothing bureau, and in many cases are ready to complain about the quality of service given to them.

Premier Bennett met with the Premiers of the Prairie Provinces on October 19, in Regina. At this meeting he stated that responsibility for medical care remained with the provinces. So far no plans have been announced by the Provincial Relief Department.

Medical Care in the Home for Those on Unemployment Relief.—We have received from Washington a copy of Rules and Regulations, number 7, governing medical care provided in the home to recipients of unemployment relief. From this publication, we quote the following:—

"The conservation and maintenance of the public health is a primary function of our Government.

"Grants made to the States from federal funds under the Federal Emergency Relief Act of 1933 may be used for the payment of medical attendance and medical supplies for those families who are receiving relief.

"These funds may not be used for the payment of hospital bills. . ., or for providing general institutional care. These necessary services to the destitute should be made available through State or local funds."

"The scope of medical care. . . . shall be construed to include: bedside nursing care, as an adjunct to medical care; and emergency dental service. . . . recognize, within legal and economic limitations, the traditional family and family-physician relationship in the authorization of medical care.

". . . service shall be a minimum consistent with good professional judgment, and shall be charged for at an agreed rate.

"The phrase 'in their homes' shall be interpreted to include office services."

The procedure set out requires authorization for care by the relief officer, with some agreed limit as to the number of visits and duration of the period. Obstetrical care is to include prenatal and post-natal care.

"All fees shall be established on the basis of an appreciable reduction from the prevailing minimum charges for similar services in the State and local communities, with due recognition of the certainty, simplicity and promptness of payment.

"Prescriptions for necessary drugs and medicines shall be restricted to the National Formulary or the United States Pharmacopœia.

"State and local relief administrations shall request the presidents of the State and local medical, nursing, dental and pharmaceutical organizations, respectively, to designate an existing committee or appoint a special committee, to advise them in the formulation and adoption of adequate programs.

"The appropriate professional advisory committee should be consulted by relief administrations with regard to disputed problems of medical, nursing, and dental policy and practice."

GRANT FLEMING

Eleven of fourteen members of the honorary attending staff of Victoria Hospital, Winnipeg, resigned on November 1st as a protest against the action of the hospital directors in continuing to admit patients on relief. It may be pointed out that all other hospitals in Greater Winnipeg had agreed not to admit patients on relief, except in cases of emergency. The definition of "an emergency", as laid down by Dr. E. S. Moorhead, Chairman of the Special Relief Committee of the Manitoba Medical Association and the Winnipeg Medical Society, is a very liberal one. The whole question goes back to the continued failure of the proper authorities to provide for payment to doctors for services rendered to persons in receipt of relief.

Notes on the British Pharmacopœia and Canadian Formulary

Changes of Name in the British Pharmacopœia 1932

There are a great many changes of names in the new British Pharmacopœia. Most of these are not important and are due to the omission of the words Gumma, Radix, Fructus, Cortex, etc.; for example, Acacia (not Acaciæ Gumma). Certain changes are very important, however. Acidum Arseniosum becomes Arseni Trioxidum; Acidum Carbolicum, Phenol; Acidum Picricum, Trinitrophenol; Digitalis Folia, Digitalis Folium; Ethyl Chloridum, Æthylis Chloridum; Extractum Filicis Liquidum, Extractum Filicis; Extractum Hyoscyami, Extractum Hyoscyami Siccum; Liquor Ammoniæ, Liquor Ammoniæ Dilutus; Pilula Ferri, Pilula Ferri Carbonatis; Magnesia Levis, Magnesii Oxidum Leve; Pruni Virginianæ Cortex, Prunus Serotina; Pulvis Ipecacuanhæ Compositus, Pulvis Ipecacuanhæ et Opii; Quininæ Hydrochloridum Acidum, Quininæ Dihydrochloridum; Resorcinum, Resorcinol; Saccharum Purificatum, Sucrosum; Suppositorium Plumbi Composita, Suppositorium Plumbi cum Opio; Tinctura Camphoræ Composita, Tinctura Opii Camphorata; Tinctura Iodi Fortis, Liquor Iodi Fortis; Tinctura Iodi Mitis, Liquor Iodi Mitis; Tinctura Quininæ Ammoniata, Liquor Quininæ Ammoniata; Unguentum Zinci, Unguentum Zinci Oxidi.

It may be further noted that Soft Paraffin is now official as either Paraffinum Molle Album (white) or Flavum (yellow).

According to the Pharmacopœia, Infusions may now be made by diluting the Concentrated Infusion or directly from the drug. If physicians want the latter variety, the word "Recens" must be added, otherwise the pharmacist may dispense the diluted concentration. The same is true of the Waters. These may be made by distillation or by other methods, one of these being the dilution of a Concentrated Water. If the physician requires a distilled water, the word "Destillata" must be employed.

Changes in Composition of Galenicals of the British Pharmacopœia

Some 36 preparations have undergone a change in composition in the new British Pharmacopœia. Only some of these are important. The Liquid Extract of Ergot is now

The Editor has arranged with Drs. V. E. Henderson and G. H. W. Lucas, of the Department of Pharmacology, University of Toronto, to contribute from time to time notes on these two books for the benefit of the practitioner. They will appear under the caption "Notes on the British Pharmacopœia and Canadian Formulary."

prepared so as to contain the supposed active alkaloids, Ergotoxine and Ergotamine, which the old extract did not contain. Liquor Arsenicalis is now neutral in reaction and not alkaline. It may consequently be used either for the old Liquor Arsenicalis or for the Liquor Arsenici Hydrochloricus, which has disappeared. Also, Liquor Arsenicalis is colourless and not pink. In Lysol (which is an official synonym in Great Britain but not in Canada), for the Liquor Cresol Saponatus, Linseed Oil is substituted for Castor Oil. The Dover's Powder has undergone a change of name from Pulvis Ipecacuanhæ Co. to Pulvis Ipecacuanhæ et Opii, and the potassium sulphate has been replaced by lactose. The Compound Powder of Rhubarb now contains slightly more rhubarb and less ginger, and light and heavy magnesium carbonate instead of magnesia. In the Syrup of Iron Phosphate with Quinine and Strychnine (Easton's Syrup) the amount of strychnine per dose has been reduced from 1/32 to 1/60 gr., thus decreasing the danger of symptoms of poisoning from the last doses from a bottle. Chrysarobin Ointment is made with Simple Ointment instead of Soft Paraffin; and the Ointments of Ammoniated Mercury, of Oleated Mercury, of Mercury Subchloride, of Sulphur and of Zinc Oxide are all made with the Simple Ointment (which contains 5 per cent wool fat, 10 per cent hard paraffin and 85 per cent soft paraffin) instead of with lard. Paraffin Ointment and Phenol Ointment will now be found to be somewhat softer than those of the British Pharmacopœia 1914.

Pharmacopœial Wines

Both the Pharmacopœial Commission and the Canadian Committee on Pharmaceutical Standards found it impossible to formulate a definition of Sherry which would be applicable to more than wine produced in a limited area of Spain; nor was there any reason why Sherry should be employed in the preparation of the Wine of Ipecac, for example. Hence the Wines of the British Pharmacopœia 1914 have disappeared. Sherry (Vinum Xericum) is no longer pharmacopœial. Those who have employed Wine of Colchicum should now employ the tincture in about half the amount prescribed for the wine. Henceforth, even if a physician prescribes Wine of Ipecac, the Tincture which replaces it will be dispensed. The pharmacopœia provides no substitute for the Wine of Antimony. A physician can readily obtain the same effect by prescribing about 1/10th grain of Antimonii et Potassii Tartras (the new name for Antimonium Tartaratum, Tartarated Antimony) for every 30 minims of the Wine previously used. The Wines of Iron and of Citrate of Iron and of Quinine have disappeared. They were very rarely employed, and those of iron of little value, as the amount of iron even in a maximum dose was far too small.

V.E.H. AND G.H.W.L.

Men and Books

THE READING OF HISTORY

BY SIR ANDREW MACPHAIL, KT., B.A., M.D., LL.D., M.R.C.S., O.B.E.,

Professor of the History of Medicine, McGill University, Montreal.

THE THIRTY-FIRST MARY SCOTT NEWBOLD LECTURE, TO THE COLLEGE OF PHYSICIANS OF PHILADELPHIA, OCTOBER 4, 1933

I find myself familiarly at home in this place. Here was the original spring of American medicine, as my own University was the original spring of Canadian medicine. For a long time the two streams flowed in parallel courses; fifty years ago they were joined by William Osler who brought to Philadelphia all he had learned at McGill.

But these two schools had a single origin, Edinburgh; their founders were, as Weir Mitchell said, children of Edinburgh, grandchildren of Leyden. In the Frick library is a series of 126 theses written between the years 1760 and 1813 by American students in Edinburgh; they bear the names of Morgan, who in 1763 founded the first medical school in the University of Pennsylvania; of Shippen, Kuhn, Logan, Rush, and Lee. This College of Physicians, opened in 1787, had four of the eleven senior fellows graduates of Edinburgh, and four others who had studied there.

Our theme tonight is more general, not history but the Reading of History. History is not a series of falsities agreed upon. Rather, it is two series of alternatives or contradictions, with their respective protagonists at the head. History is a record of military and political campaigns. Soldiers and politicians make campaigns; but it is the historians who make the history of them. And the historian is a man; his history arises from his heart; it mounts to his head, and trickles through his fingers upon the written or printed page. Before we can accept as true what he writes, we must know something of his heart, head, and hand. That is the task of modern historical criticism; and the critics are now in full cry, with a result that is devastating of traditional opinions.

The history of medicine has been too long immune from this critical process. It was merely a dull chronology, a vain repetition, illumined occasionally by flashes of brilliant scepticism, down to the nineteenth century, when Haëser in Breslau created the first systematic record, and Emile Littré applied the immense apparatus of his learning to Hippocrates and Pliny; but this light quickly passed, and henceforth a historian was accounted great according as he could decipher an inscription upon an Egyptian stone or an impression upon a Babylonian potsherd. But this apathy and pedantry too has passed. Signs of new life appeared. Brilliant monographs of the masters of medicine were written in English, by which they were brought into the company of famous men for all the world to know. In the scholastic field there was a renascence in which the leaders were E. T. Withington in England, whose labour has not yet come fully into the light; and Charles Singer; Max Neuburger of Vienna, and Karl Sudhoff of Leipzig. It is of interest that Sudhoff's successor is at present developing his method in a neighbouring university. He comes into a field well prepared by Garrison, Buck, Packard, and Welch.

Medicine is a large part of life; and the history of medicine is a large part, possibly the largest, of the history of life. Human activity is governed by sickness and health. Conquerors have been arrested in their career by personal illness; armies have been destroyed, and the civil population wiped out by epidemical disease. Civilization was forced northward by the insidious corruption of malaria. In our own time civilization is moving southward again, following the march of medicine which is making southerly regions, even sub-tropical and tropical, habitable once more for white men. That is modern history, and it is the history of medicine.

To develop this theme is too large a task for one short hour. It demands an entire rewriting of history from a new elevation. That writing is now being done by many hands in the form of personal biographies of great historical personages. The salient fact in all is their physical and mental health. To describe that is the function of the medical historian. The course of European history has been governed by the conduct of kings and especially of queens; and a queen is a woman before she is a queen. For fifty years the history of Europe and the subsequent history of the British Empire turned upon the virginity of Elizabeth, herself the product of an ulcerous father. She was, if we can believe those sly and snickering searchers who ransack old records, a virgin by necessity and not from choice, as they affect to prove by her unsatisfied flirtations or licentious amours with Seymour, Philip, Charles, Eric, Anjou, Dudley, and Essex. Out of this physical defect arose her perverse temper, her jealousy and hatred of the young and beautiful Queen of Scots, and her final act of revolting cruelty which in spite of her placed the Stuart dynasty on the throne.

The Stuarts were dogged by ill-health. They were an invalid race, suffering from the mental disability that always accompanies invalidism. Self-will is the stigma of the invalid; the Stuarts were self-willed, and it was self-will brought them to their ruin. All this is recorded in the case-books of Theodore Turquet de Mayerne, court physician for nearly fifty years, the first in European medicine to record his cases with a fullness and precision that has not since been excelled. These case-books, twenty-three in number, are still extant, written in bad Latin and worse French, not mainly by his own hand, but by his two secretaries, as George Gibson explains in the July *Annals of Medical History*. They are the real source for the history of that troubled period.

The case-report of James VI, for example, discloses the mental and physical condition of that coarse and crafty king. He had a drunken wet nurse; he did not walk until he was six years old; a leanness and atrophy of the legs with painful spasms persisted during his life; his right foot had an odd twist, and grew weak. He sleeps ill and restlessly; he is very wrothful; at times he is melancholy. In drink he errs as to quality, quantity, frequency, time, and order; he has the strongest antipathy to water. Of food he eats everything but bread; and he has no teeth; he does not chew but swallows it whole. It is little wonder that he suffered from colic, vomiting, diarrhœa, and other complaints which may well be left in the decent obscurity of the original Latin. Late in life, he had continued fever, apthæ all over the mouth, fauces, and œsophagus; fermentation of bitter humours boiling in the stomach, swollen glands like the phlegmatic excrescences of scrofula, which finally suppurated and formed ulcers.

Whilst the civil war was raging, Charles I besought Mayerne, *pour l'amour de moy,* to come and see his queen who was suffering from enlargement of the liver and spleen, swelling of the gums and painful teeth, renal calculi, cough, herpes of the upper lip, inflammation of the eyes, recurring headaches, curvature of the spine, emaciation; and, concerning the mind, anger, sadness, frequent tears. Now we know why the war went badly; for the sickness of a man's wife is only a little less distressing than his own. To complete the illustration, Anne, the last of the Stuart dynasty, with the hereditary stubbornness of her race, persisted in her non-viable conceptions until the number

of sixteen was reached; and the throne was left vacant for the Hanoverians who happily occupy it until this day.

In such light as this, the immediate purpose at the moment is to suggest that we revise our opinions of the history of medicine too, as we are revising our opinions of history in general. Historians, like other men, are divided in opinion by birth, breeding, and temperament. The one is conservative, preferring to leave bad enough alone lest it become worse; the other is liberal, desiring change in the hope of better things. Clarendon the royalist Tory, and Macaulay the liberal Whig, wrote of the same period; and you can believe neither the one nor the other. Grote in his history of Greece, by his love of democracy, makes little of Pericles and glorifies his successor, Cleon the demagogue. Mommsen by his hatred of democracy magnifies the imperial Cæsar, and is unjust to Cicero. The toryism of Allison obscures the truth of the French revolution as completely as the romanticism of Michelet. The history of the American revolution, as taught in American schools, is quite different from the history taught by the exiled loyalists in the schools of Canada.

The widest gulf dividing historians is religious belief. In that great period of English history from the accession of Henry VIII to the usurpation by William of Orange, covering the reign of Elizabeth and the dynasty of the Stuarts, religious passion was aroused to a fury which is only equalled by the fury of the historians upon the one side or the other. Between the protestantism of Froude and the catholicism of Lingard there is little to choose. By a strange chance, the history of that period which now excites the public ear comes from Catholic hands. The subject is still further complicated by the reverse attitude of those historians who are so upright that they lean backward, and are enamoured of every century and of every country but their own.

This bigotry has vitiated the whole history of medicine too. In general it takes the form of a charge that the Church has been a consistent enemy of science as a whole and of medicine in particular; and by the term "Church", is meant equally the churches that had their respective sects in Rome and in Geneva. From each side let us select one or more cases by way of illustration.

Michael Servetus, who as anatomist succeeded Vesalius, who was *vix ulli secundus* in knowledge of Galen, who had a shrewd prevision of the pulmonary circulation, was condemned *estre bruslé tout vyfz,* and was so burned alive in Geneva; but his scientific opinions were never called in question; his offence was his published doctrine of the Trinity. It is only fair to add that Calvin pleaded in vain for him not the burning crown of straw and sulphur but the Christian courtesy of the headsman's ax.

On the other side is the case of Galileo. The truth of his scientific observations was never called in question. His results were merely declared to be in opposition to scripture, which they were; to the Aristotelian philosophy, which they were; and to authority, which they also were. He accepted the decision formally, and for the next seventeen years proceeded quietly with his work. Then he broke his pledge, and published a thesis which was based on an error in science. He was summoned a second time. His penance was a slight one; he was enjoined to recite once a week for three years the seven penitential psalms. The remaining eight years of his life he spent in the houses of distinguished friends, one of whom was an archbishop. It is fair to add that the decree against him was not sanctioned by the Pope, who was a friend of his; and in time it was rescinded. The famous legend of *e pur si muove* appeared for the first time, two hundred years later, during the French Revolution.

The parallel experience of Servetus and of Galileo had a precise analogy in our time. Seventy years ago, Charles Darwin promulgated a theory to explain the origin of species by means of natural selection, and not by a specific act of creation. He and his followers were condemned upon the same grounds as Galileo was. His theory was held to be contrary to scripture, contrary to faith, and against authority. The churches might have gone further. The thesis on which Galileo was summoned a second time has since been proven scientifically false; and Darwin's theory has not received one additional confirmatory fact in these seventy years. As for Servetus, the matter of the Trinity, for which he suffered, still remains in a state of obscurity. It is true that Darwin did not suffer the penalty of physical death. For a variety of reasons the secular arm could not then be evoked.

Between these opposing poles the history of medicine flowed. It is yet clouded by religious and other preconceptions. You can read in most books that the Church placed a ban upon dissection of the human body. The error is easily explicable. The ban was not upon dissection, but upon the pious practice of bringing home to Europe the bones of soldiers who had fallen in the crusades. It was a sanitary measure to prevent the introduction of plague along with the bones. The Bull is known as *De sepulturis:* Concerning the burial of the dead. It was issued by Boniface VIII in 1300, and reads: Persons cutting up the bodies of the dead and cooking them, in order that the bones being separated from the flesh may be

carried for burial into their own countries, are by the fact itself excommunicated. It had nothing to do with dissection.

This delusion that a clerical ban was placed upon the dissection of the human body is yet prevalent, although it is well known that the medical schools of the Renascence were based upon human anatomy, by Fallopius at Padua, Rondelet at Montpellier, Massa in Venice, and Fuchs at Tübingen. Vesalius himself was dissecting and publishing without restraint. His enemies were of his own household, his colleagues. It was by them he was driven from Paris to Louvain, to Venice, to Padua, to Pisa, to Bologna, finally to Madrid, and to his obscure grave on the island of Zante.

True, there was a prejudice against the practice on natural grounds, and as an inheritance from the Greeks who held the body in high respect. That tradition was broken in the Alexandrine school under the influence of the Egyptian practice of embalming the dead, but it died out slowly, and even Galen was compelled to content himself with the bodies of animals. Even down to our own time, for lack of bodies, anatomy was not free from scandal, and the way of the dissector was hard. As early as the year 1319 there is record of legal procedure against four medical students for body-snatching; the trials and executions in Edinburgh for the same offence are quite modern and notorious.

Within sixty years of the issue of this Bull, Guy de Chauliac, the father of modern surgery, was surgeon to three popes,—at Avignon, it is true—and whilst a member of their household, insisted upon the importance of dissection as performed by "Mondinus". Those who are interested in this controversy will find the source in *L'Histoire littéraire de la France* issued by members of L'Institut, which is a sequence to an earlier work by the Benedictines of St. Maur.

When we come to the more serious charge that the Church was a consistent enemy of surgery, we are on firm historical ground. In the year 1163, an edict was issued from the Council of Tours, by which clerics were forbidden to perform surgical operations, on the ground that *ecclesia abhorret a sanguine*, the Church abhors the shedding of blood. This movement first appeared at the Council of Rheims in 1125, and again at the Lateran council of 1139; but not all these councils were ecumenical; certainly the Council of Tours was not, and one cannot determine from its action what was the general policy of the Church. But the reason for the edict is obvious.

In the 6th century, the pagan Roman schools were swept away by the tide of barbaric invasion. The episcopal schools attached to cathedrals and monastic schools took their place. They taught only what was considered requisite for the priest and the monk; but pagan text-books remained, because there were none others, and a certain tincture of secular learning was preserved. These schools developed into the modern university.

But the mediæval latin term *Universitas* merely meant a community regarded in its collective aspect, as a corporation, not as a universal place where everything is taught, from plumbing to music. The original term was *Universitas magistrorum et scholarum*, a company of teachers and scholars bound together for protection in strange lands and for mutual intellectual advantage. The abbot of the monastery or the chancellor of the cathedral conferred upon the graduate the *facultas ubique docendi*, the right to teach anywhere, a master's degree. The biretta was placed upon his head; he was capped; he was delivered from bachelordom according to the rite of Roman manumission. In time this rite became formal, and could only be performed by one who had licence from pope, emperor, or king.

These monastic schools were the only civilized communities in Europe. The earliest and most famous was the Benedictine school at Monte Cassino, near Naples, so near to the first secular school at Salerno that the connection between them has ever since been a subject of inquiry. Obeying the divine command: Go ye therefore, and teach all nations, these Benedictine monks went forth into the European world, bearing with them the seeds of civilization which they planted and nourished in the remotest fields. The Benedictines are not vowed to corporate poverty like the later mendicant friars, and were therefore free to set up monasteries in new lands. Every monastery had a hospital as an integral part, which during those dark ages was the only refuge for medicine. The greatest of these was St. Gall in Switzerland, of which the plan is yet preserved in the archives of the convent. It shows a large infirmary with six rooms, the physician's house, a room for bloodletting and purging, a drug store, a room for the dangerously ill, the garden of medicinal herbs, and also the cemetery. The medicine practised in these hospitals was primitive, but it was the best there was in that age.

The condition of the world was at its worst. From the Alps to the Mediterranean devastation, famine, and pestilence covered the earth. The Church alone remained as an institution with some appearance of stability. In default of a rational medicine, men sought the supernatural. The sick were brought to the churches where they received whatever benefit there was in lustrations and prayer; and the relics of the saints were besought.

This old field, long disdained, has now been annexed to orthodox medicine under the name

of psychotherapy. We are fond of giving hard names to things we do not understand. The influence of the mind upon the body was the principle of the faith-healers from that day until this. They cured diseases which we cannot cure, but wish we could. It went by the name of religion; and religion is the most primitive as well as the most powerful of all human emotions. It is the romance of the lowly, a way of looking upon the universe; and we know what miracles can be wrought under the influence of romance. It can transmute evil into good, ugliness into beauty. Let us not then speak too contemptuously of these ancient or modern faith healers.

Religious zeal is bound up with love of man, even to-day; and philanthropy always seizes upon medicine as the chief weapon against human ills. The Benedictines of Monte Cassino adopted as their rule: *Infirmorum cura ante omnia adhibenda est, ut sicut re vera Christo, ità eis serviatur;* the care of the sick above all things is to be undertaken, so that they be served as if in reality it were Christ himself who was being ministered unto. These Benedictines never lost touch with reality. They had to instruct them Cassiodorus, "the last of the Romans." He gave detailed advice to the monks upon the authors of antiquity that should be read, Hippocrates in Latin translation if the language of the Greeks was unknown to them; Galen and Celsus; and they were to know the properties of herbs and the blending of drugs.

Medicine was practised by the monks because there was no one else to practise it. Bishop Paul, of Merida, performed a Cæsarian section with his own hands. The practice of surgery became lucrative, and men gained entrance to the monasteries for worldly gain, eager, as in the vision of Milton, for their bellies' sake to creep and intrude and climb into the fold. It was against this abuse the edict was issued in 1163 by the Council of Tours, forbidding clerics to practise surgery. By this time, secular surgeons were coming into practice; the faculty of Paris had come into being, and from what we know of faculties it is fair to surmise that the edict was not unwelcome to them, even if they did not instigate it.

History must be read in the light of the temper and beliefs of the period. In that light, let us give one glance at our own. You have heard of the Society of Friends, to whom in derision the term Quaker was applied, as in equal derision the term Christian was first applied to the believers in Antioch. Not so very long since, as time goes, four Quakers, to employ the term which has become a mark of honour, one of whom was a woman, were hanged in Boston. Much later, nineteen persons were executed for witchcraft in Salem. These executions were instigated by the preaching of that eminent divine, Cotton Mather; the practice was stopped by that dissolute monarch, Charles II, which shows that the children of this world are sometimes wiser than the children of the light.

To descend from these high themes which I have made so peculiarly my own that, like every occupant of a professor's chair, I may assume that they are of equal interest to a general audience, let us examine a more familiar source of error in reading the history of medicine. Not everything is trustworthy that is written in Greek or Latin. The medical advertisements in the newspapers, or even in our medical journals, do not always give a correct impression of modern medicine. Lydia Pinkham, for example, cannot be accepted as the type of the modern female physician, as Trotula and Abela are accepted as the type in the school of Salerno; nor should Williams' pink pills be considered our universal remedy, as Raleigh's cordial was in the 17th century.

Only last winter, every American newspaper carried a story—that is the correct phrase—of a Canadian boy, thirteen years old, who with a razor-blade performed upon his mother the operation of thoracocentesis for an empyema of the lungs. The story was made still more interesting by a tinge of malice against the profession, that a doctor had refused to attend the patient unless a fee of ten dollars was paid in advance. The secretary of the Canadian Medical Association investigated the case, and discovered that the operation was merely the puncture of a water blister on the back, which had been caused by a hot poultice. Much of our medical history has no better basis.

Quacks could write in Latin as easily as they now write in English. In Rome a boastful pretender, Thessalus, reversed the Hippocratic maxim, that the art of medicine is long, and promised his students that he would teach them the whole subject in six months. Upon his tomb, he advertised himself as ἰατρὸς νικηταὶ the victorious physician. These were the hungry Greeklings who over-ran the Roman world, until finally all physicians, good and bad alike, were expelled from Rome, giving rise to Pliny's bitter jest, that for five hundred years Rome had done very well without physicians of any kind. Who the Abram Flexner was who exposed their pretensions we do not know. The annual pretensions of the many American schools exposed by that resolute and drastic reformer make equally strange reading to-day.

There were jesters in the profession in those days, as there are now. Paracelsus was one of them. His father's name was Bombast; he adopted his new name to signify that he was superior to Celsus, which in many respects he was, especially in his appeal to nature and not to books, and in his biting criticism of the ignorance, pomposity, and greed of current medicine. He began his course of lectures at Basle by publicly burning the text-books in

common use; and we still take many of his jests in serious earnest.

For more than forty years the books have been citing a perfect case first recorded by "Egerton Y. Davis." It was offered to the *Montreal Medical Journal;* but as the address given by the contributor was Caughnawaga, an Indian reserve nine miles away, and as there were certain elements of the comic in the case, one in which a coachman and a cook were mutually concerned, the editors were doubtful of its veracity, and declined to publish it. By some means it appeared in an American Journal from which it gained entrance into the books. Egerton Y. Davis, although he wrote from so obscure a place as Caughnawaga, afterwards attained to some distinction in the medical world; he became professor of medicine, first here in Philadelphia, then in Baltimore, and finally at Oxford.

Nationalism has an influence upon the writing of history. The French would have us believe that Sydenham, the English founder of modern medicine, had studied at Montpellier, although in none of his writings does he make mention of any such event. The first suggestion comes from Desault in a book published in Bordeaux in 1733. The legend is amplified by Dr. F. Picard into the affirmation that he was inspired by Dr. Barbeyrac, who at the time was insisting upon the importance of clinical observation. It is well known that he made rounds of the wards in company with a group of students, and made each patient the subject of a clinical discourse. It is known too that he was of independent mind, aloof from controversy, and disdainful of indiscriminate drugs; but it is not evidence enough that the two men were attracted to each other because they were both protestants, when there is no evidence that they ever met.

Civic pride also has a part. Edinburgh was contemptuous of Lister because he worked at Glasgow, and of Aberdeen where the new method of acu-pressure was being practised. Oxford and Cambridge were in puerile rivalry even before the time of Erasmus; and a similar state of mind is not even now unknown between some modern universities and between some hospitals even in the same city. Against all this we must beware in our reading.

Certain ancient books are popular by reason of their interest and style; but, like such modern books, they are not more trustworthy on that account. Celsus is the best known of these popular writers. Although he wrote in the first century, his manuscript was only discovered in the fifteenth, and is our main authority for the long period from Hippocrates until his own day. His *De Medicina* was written not for physicians but as part of a series for the average educated man, a popular science as we would say. If ever he was a physician, his fate was that of every physician who makes history his profession; he soon lost the quality of physician. His book is a summary of all previous and existing medical knowledge, marked by keen criticism, sound judgment and wide knowledge; but one who knew so much could know little accurately.

This book was freely printed, and by reason of the ease and purity of his Latin Celsus has become the most popular of classical writers. Forty years ago, when papers were set in Greek and Latin for the aspirants to the higher degrees and qualifications, Celsus was the best beloved of medical examiners; but those examinations were not so terrifying as might now appear. The texts were usually drawn from Celsus and Hippocrates, but the examiner found it easier to cut a piece from an old familiar paper than transcribe new texts with his own hand. Candidates are not so simple-minded as examiners affect to believe.

Galen himself, beyond his professional knowledge, was an encyclopædist; and in his teleological desire to show the divine wisdom in making everything subservient to a preconceived design he vitiated his own anatomical studies, and imposed his dogma upon the medical world until the time of Harvey and Sydenham. Our other authority for the period is Pliny, who disliked physicians so bitterly that he could not tell the truth about any events in which they were concerned.

We must read and judge ancient medical journalism as we read and judge our own. There were advertisers in those days, but their methods were less refined than ours. And yet, our journals contain the outpouring of laboratory note-books, papers describing not what the writer has done, but suggesting what he proposes to do, preliminary deliverances, so that a possible competitor may be forestalled. The critical modern method of history should be applied to these writers also, to discover if they are making a summary of previous knowledge, if indeed they have read the "authorities" they quote so glibly, or if they are really recording something created out of their own minds and experience.

On the other hand, it is a legitimate thesis, that no history should be read, since history discloses how base men may be. In our own profession we have not been free from fault. Profound discoveries were met with scepticism, derision, falsehood. We are more lenient now; we believe everything we see in print. The conduct of the London faculty towards Sydenham; of the Scottish surgeons towards Lister; of the *Institut de France* and the *Sorbonne* towards Pasteur, makes painful reading. Pasteur spent half his time and more than half his genius in needlessly repeating

experiments, in the vain attempt to persuade the Academicians who refused to be convinced. He worked in an atmosphere of envy, suspicion, and distrust. He would have accomplished even greater things had he been left free. There are not many men of genius in the world. The rest of us should be warned by history to regard them with awe, or at least to leave them alone until their life is fulfilled.

It is now pertinent to our theme to be bold and surmise what history will record of this present period. History deals in categories—methodices, empirics, iatro-chemics; and I suspect that we will be classified as iatro-bio-chemists. We fail to understand the language in which mediæval medicine was written; the future historian equally will fail to understand our writing. He may well doubt if we understand one another. As Voltaire said of the Basques: When they converse, they pretend to understand what is said; but I do not believe it.

Our observation has outgrown our power of expression. We manufacture new words as we go along. They are in part Greek, in part Latin; and when a German or French element is introduced, the result is quite unintelligible. All science is a striving towards the abstract, the universal; and it has proceeded by methods which appear to us clumsy beyond belief. Any one who attempts to multiply two vulgar fractions in the arithmetical notation employed in Hebrew, Greek, or Latin will understand something of the present state of bio-chemical expression, and the difficulties with which the student is faced. It is written, like primitive mathematics, in a series of invented words. Who in this audience knows what phenolglycol is, or the meaning of its chemical formula? A student must know; he must learn the language as a musician learns musical notation; and if he aspires to be a professor or a conductor he must be able to read fifteen lines of a score at a single glance. It does not follow, however, that the conductor of an orchestra can either write or make music; it does not follow either that the iatro-bio-chemic physician can heal the sick. It will be a long time before these physicians evolve a universal language possessing the simplicity, elegance, and symmetry of algebra; it is doubtful if the student in his short five years can obtain anything more than a smattering of the current jargon. The historian will wonder, too, how or when he learned his medicine, or what connection all this bio-chemistry had with the healing of the sick.

I am bold enough to suggest that we follow in the slow foot-steps of the mathematicians, abandoning words, and employ symbols instead. A man of any language who enters upon the study of the heavenly bodies is provided with a series of notations to be employed in the subsequent formulæ. There are twenty conventional signs easily memorized to indicate right ascension, declination, heliocentric longitude. Or if the flow of water is concerned, there are symbols to signify volume, velocity, pressure, time. In a larger way, the gamma or factorial function is expressed in a simple formula to indicate the product of all integers from zero to infinity; and a single letter will suffice to suggest that exponential function which is the base of the earliest logarithms. The symbol to affirm the relation of diameter to circumference is familiar to all, and avoids the necessity of setting down an infinite series of decimal places.

In mathematics, every quality, relation and function is indicated by a symbol; by an arrangement of these symbols a statement can be made whch is universally understood; it will be true according as the observation is correct, the premises just, the hypothesis valid; but one cannot infer from the perfection of expression that the statement is true. This is the method I venture to commend to the researchers in laboratories who now turn out upon the printed page the undigested contents of their note-books in a kind of short-hand that few comprehend. I hasten to add that there may be bad mathematical grammar, as there is a bad grammar of the language in English.

Apart from obscurity of expression, possibly the future historian may observe that we went too far with our sorceries and ended in a street that was closed. There are warnings on every hand, such warnings as were issued by Locke and Sydenham to the spagyrists of 17th century medicine; and by Robert Boyle, author of Boyle's law, the "sceptical chemist" who warned them that they were in danger of having their eyes darkened and their brains troubled by the smoke of their own furnaces.

I am led to these reflections by reading the first number of the current volume of a celebrated medical journal, published under famous auspices, in which I have an honoured place. I select it as the final expression of modern medicine, and a single article as the most scientific example. I ask myself what the future historian will make of such words and phrases as: doubly adrenalectomized rats and cats; hypophysectomized tadpoles; water shift; fatigue threshold; lag; shock-levels; ergometer; drive; too fine a discrimination in a conditioned reflex.

In the dreary waste of antiquity certain figures emerge out of the mist. It is upon these figures our attention should be fixed. Their method was one; the lesson to us is always the same. They looked upon disease with newly opened eyes, with fresh minds unbeclouded by books, tradition, or authority. I shall spare you their names; to dwell upon them and describe their doings would be to recite the inner history of medicine. What the most modern surgeon does in the most modern hospital as a matter

of routine is merely what they darkly apprehended and tried to do, but did imperfectly from lack of knowledge of Nature's methods in collateral fields of science.

But this modern surgeon, unless he understands what they were trying to do, does not know what he himself is doing. And lest we may think of ourselves more highly than we ought, I shall remind you that in the opening days of the recent War, our surgery was as far astray as it was when Ambroise Paré came upon the field of battle; but to our supreme credit we quickly learned to clean a wound and leave it at rest—to Nature, the healer of us all.

In medicine also, the patient was to these old physicians, as Dean Martin says, the centre of their problem. The most modern medicine has now turned definitely away from the laboratory as the last refuge, and is bringing the theories engendered there to the calm test of the bed-side. It is learning the lesson of history.

Wrong opinions of the past breed wrong opinions of the present. To suggest certain grounds of fallacy is the intent of this detailed dissertation. For the history of medicine is not an extinct creation to be examined by professional archæologists alone; it is more swift and vital than ever before. Call to mind what has happened in your own time in the treatment of every disease. You have seen a typhoid patient starved on milk; under a later practice he was lowered into icy water, like a sailor about to be keel-hauled, reminding one indeed of the central figure in Rubens' famous picture at Antwerp.

This, not ancient chronology alone, is the history of medicine. It should interpenetrate the whole of practice; it should be taught not by professional historians alone, but by the occupants of every chair, by the experimenters in the laboratory, and by the clinician at the bedside. But first, there must be a correct reading of history. That is the plea to which you have listened so patiently, and I trust that I have not traversed the intention of the pious founder of these Mary Scott Newbold lectures. I hope I have not departed from the practice of my thirty distinguished predecessors.

"He who knows only one branch of his art is like a bird with one wing. . . He who is versed only in books will be alarmed and confused, like a coward on a battlefield, when confronted with active disease; he who rashly engages in practice without previous study of written science is entitled to no respect from the best of mankind, and merits punishment from the king; but he who combines reading with experience proceeds safely and surely, like a chariot on two wheels."—*The Code of Manu.*

Provincial Association Notes

The Alberta Medical Association

The twenty-eighth annual meeting of the Alberta Medical Association was held in the Palliser Hotel, Calgary, on September 12th, 13th, and 14th, 1933. There was a splendid attendance, well up to the average of recent years. The representatives from the Canadian Medical Association were Prof. Roscoe Graham, of Toronto University, Prof. J. C. Meakins, of McGill University, Dr. T. C. Routley, General Secretary of the Canadian Medical Association, and Prof. A. Grant Fleming, of the Department of Public Health and Preventive Medicine, McGill University, and Associate Secretary of the Canadian Medical Association, each of whom added greatly to the success of the meeting. This success was due not alone to the high standard of their addresses but also to the helpful stimulating messages which each one brought to us. For these reasons we are much indebted to our parent organization.

At the banquet held at the Palliser Hotel on September 13th a short address of welcome to the visitors and to the members of the Alberta Medical Association was given by the Mayor of Calgary, Mr. Andy Davidson. Addresses were also given by Dr. R. C. Wallace, president of the University of Alberta, the Hon. George Hoadley, acting-premier of Alberta, and by Dr. T. C. Routley. Dr. Wallace's address was of the type we would like to listen to oftener, and showed the broad learning and sane judgment of the man and of the scholar. It was a philosophical discourse full of wisdom and of the mature understanding of present day conflicts and conditions. Referring to professional men, he stated that they were lacking in a perception of the social sciences, and possibly the world was too lopsided. He urged a pooling of the resources aiming towards equalization of all the sciences. Scientific investigations of men of the medical profession had increased age-limits. Young men were unable to find work due to the fact that older men were still working. Ultimately an age-limit for working may be instituted. A pooling of experience to keep young men on the "right rails" must then be undertaken. The solution of the question of control of population lies in the hands of the medical profession. Faced with greater planning, we must avoid standardization. The responsibility of the state will continue to grow. Turning to the subject of medical education and the long years it took for a young man to complete his studies, he suggested that our requirements of eight years for the acquirement of knowledge to practise medicine, should be shortened, and there should be a return to the apprenticeship which was in vogue during the past century.

The Hon. George Hoadley, who for many years has had advanced news on health insurance, remarked that those things which are not adapted to present conditions must not be perpetuated. Medical men must become leaders and adjust their profession to the conditions they must meet. The Provincial Government had made representations in respect to medical care, that it be ranked in the same way as other forms of relief. It should be paid for by the two governments, and by the municipality, where possible. We have not got any results to date. Premier Brownlee is at present in Ottawa urging certain alterations in the scheme of relief. Among these matters is the recognition of the right of payment for medical care.

Three years ago a statute was passed by the Provincial Legislature, which requires those who wished to be classed as specialists to register with the University of Alberta. A considerable number have registered up to the present time. Stricter regulations will be put in force before long.

Hospitalization and the nursing profession must be considered. A proper system of hospitalization could only be accomplished by unity of purpose. Mr. Hoadley asked for this cooperation and he felt sure that the medical profession would be willing to give it.

Dr. T. C. Routley gave a spirited address on the present-day difficulties of the medical profession in most of the provinces of the Dominion, and of the various ways in which the Canadian Medical Association was endeavouring to assist the profession at large. He stated that the Hon. George Hoadley had challenged the medical profession when he stated that the Province of Alberta is willing to pay its share of half of the fees of the regular tariff to physicians for care of the indigent sick, if the Federal Government agreed to a system of medical relief. Dr. Routley's challenge was, that Alberta should head the way by paying the share it would pay if the Dominion Government were to contribute. He said in reference to specialization that a national rather than a provincial scheme should be worked out.

Dr. A. Grant Fleming at one of the luncheon meetings addressed the members on the subject of "Preventive medicine in general practice." He stated that our profession has made good progress in the field of physical health, but he hoped that in the years to come, it will show a corresponding result in the field of mental health. Both the maternal and infantile mortality rates in 1932 were the lowest in the history of our Dominion. Tuberculosis also showed a new low rate, yet this disease is a greater challenge than ever before, owing to the necessity of early diagnosis and treatment. He emphasized the necessity of the complete registration of communicable diseases. Physicians were delinquent in reporting, since 50 per cent of the cases of tuberculosis were not known until after death. Venereal diseases were seldom reported. He referred to work being done towards improving the health of infants, to schools and to industries recognizing the importance of health, and establishing their own medical departments. Preventive medicine is just as much concerned with mental as with physical health. There are more beds in our mental hospitals than in our general hospitals. The number of people who live unhappy lives is large. The physician must study the mental field. Preventive medicine enters into this problem, because it embodies sufficient knowledge to justify a program of prevention of mental diseases and the promotion of mental health.

At a public meeting, held at the Palliser Hotel, Prof. J. C. Meakins gave an address on "Heart disease", and Prof. Roscoe Graham, one on "Cancer".

The report of the cancer committee for 1932 evidenced the commencement of a complete and accurate system of reporting this disease. While this report is more complete than that of 1931 yet it is so incomplete as to be unreliable as a basis for statistical conclusions. In reviewing the cases, the fact that in almost 100 per cent of case instances treatment was given promptly after diagnosis is significant. Poverty as a reason for delayed treatment was given in one case only, and in this instance the radiologist concerned offered to provide the treatment, but the patient refused to accept any treatment until he could pay. The total number of deaths in Alberta in 1932 from cancer was 528.

Entertainment was provided for the members and their wives. Among these an At Home was held at the residence of the President of the Alberta Association, Dr. and Mrs. H. A. Gibson. Other functions were given in honour of the visiting ladies.

The following officers were elected for 1933-1934:— *Past-president,* Dr. H. A. Gibson, Calgary; *President,* Dr. B. R. Mooney, Edmonton; *First Vice-president,* Dr. A. H. Baker, Calgary; *Second Vice-president,* Dr. R. P. Borden, Coleman; *Treasurer,* Dr. W. T. Hynes, Lacombe; *Secretary,* Dr. G. R. Johnson, Calgary.

Members of Executive Committee:— Dr. G. A. Davidson, Ponoka; Dr. J. C. Shillabeer, Wetaskiwin; Dr. York Blaney, High River.

Representatives to Council of the Canadian Medical Association:— Drs. B. R. Mooney, George Johnson, B. C. Armstrong, E. P. Scarlett, L. C. Conn, G. H. Gibson, P. M. Campbell, H. A. Gibson.

Representatives on the Editorial Board of the Canadian Medical Association Journal:— Drs. G. E. Learmonth (Chairman), H. Jamieson, T. H. Whitelaw, F. H. H. Mewburn, W. A. Henry, W. E. Bryans and G. G. Elder.

G. E. LEARMONTH

The Ontario Medical Association

ANNUAL MEETINGS OF DISTRICTS NUMBER ONE TO TEN

District Number One.— The annual meeting was held in Windsor on October 4th.

At the District Executive meeting held at 10.30 the executives from Essex, Kent and Middlesex were present. The principal discussion of the morning was on medical relief. Dr. A. J. McGanity described the plan in operation in Kitchener and Waterloo and also other medical activities of District Number Two. Dr. L. A. Glenn, of Chatham, and Dr. Geo. A. Ramsay, of London, also discussed welfare operation briefly as these districts are not yet working under government rulings. The Border Cities activities were discussed by Drs. A. H. C. Trottier and Geo. F. Lewis. Medical advertising was also taken up and was left for the consideration of the county societies before proceeding further.

The following resolution was passed,—

(1) THAT the District Number One meeting, convened at Windsor, go on record as follows,—

THAT, with the establishment of a Cancer Clinic in London, the appointment to its medical personnel should be with the University of Western Ontario to assure permanence and efficiency, and that they should proceed to carry out an extension in the matter of the education of the profession of this District in the study of malignant diseases.

This was moved by Dr. Trottier and seconded by Dr. Glenn.

The Essex County Medical Society met on November 7th and unanimously approved the provincial scheme of advertising in the newspapers of the Province. The Society as a whole is willing to pay its share from its own funds. No decision was taken in regard to the county society collecting the provincial fees.

The afternoon session was purely medical. Some six papers were read and discussed, Drs. W. R. Waddell, J. H. Geddes, J. A. Macfarlane, W. C. Doyle, L. J. Hirschman (of Detroit), Jas. Moriarty, Geo. S. Young, F. J. H. Campbell, F. A. Brockenshire, and Geo. A. Ramsay taking part.

After dinner addresses were given by, Dr. F. C. Neal, of Peterborough, President of the Ontario Medical Association, Dr. T. C. Routley, Secretary, and Dr. G. R. Cruickshank, of Windsor, representative of District Number One on the College of Physicians and Surgeons of Ontario.

The afternoon attendance was 123 and the evening, 106.

District Number Two.—The annual meeting sponsored and arranged by the Guelph Medical Society and the Wellington County Medical Asociation, was held on August 30th, on the beautiful lawns of Homewood Sanitarium. The thanks of the District are due the Superintendent, Dr. Harvey Clare, and his Board of Directors, whose generous hospitality contributed so materially to the day's success.

The officers of the City and County Associations, as a District Executive, met the President and Secretary of the O.M.A., at 11.00 and the first-hand discussion of district and provincial medical problems proved most helpful and was only terminated by the necessity of adjourning for luncheon. This conference promises to become one of the most important features of the District Meetings.

Over 200 members with their friends, as guests of Homewood Sanitarium, enjoyed the ample provision and courteous service that had been arranged for the luncheon. At its conclusion, Dr. J. P. McKinnon, President of the Guelph Medical Society, called on Dr. F. C. Neal and Dr. T. C. Routley to address the members on behalf of the Ontario Medical Association.

At the afternoon session, addresses or papers were given by the following: Drs. Harvey Clare, M. H. V. Cameron, W. P. Tew, and William Magner.

District Number Three.—The annual meeting was held in Durham on September 26th. A business meeting of the District Committee on General Purposes was held at 2.00 p.m., at which problems such as medical relief, medical publicity, post-graduate work, etc., were discussed.

The scientific program commenced at 3.00 p.m., when papers were given by Drs. F. F. Tisdall, Gordon S. Foulds, and Frank J. O'Leary.

During the afternoon the visiting ladies were entertained by the wives of the local doctors at bridge and bowling, after which they joined the doctors at dinner in the Presbyterian Church.

Following the dinner, Dr. F. C. Neal, of Peterborough, gave a very interesting address on "Problems confronting the profession at the present time." This was followed by a talk by Dr. T. C. Routley on "The value of medical organization under present economic conditions."

Dr. T. H. Sneath, of Durham, was nominated as *Counsellor* for the year 1934 and Drs. Francis Moore, of Clarksburg, and Malcolm Stalker, of Walkerton, were elected *Vice-Counsellors.*

District Number Four.—The annual meeting was held in St. Catharines General Hospital on October 25th.

The District Committee on General Purposes met at 10.00 a.m. to discuss many matters of interest to the profession. A report of this Committee was presented to the general meet-

ing later in the day. Dr. W. E. Gallie, of the University of Toronto, held a clinic in surgery at 9.00 a.m. This was followed by a medical clinic by Dr. A. H. Gordon, of McGill University. Members of the District were guests at luncheon of the Board of Governors of the St. Catharines General Hospital. Immediately following the luncheon, Dr. F. C. Neal, of Peterborough, gave a very interesting address, dealing with "Medical care." Dr. Neal suggested that a survey be made of the Province to determine its medical needs. He stated that, at the present time, vast areas are without trained men, while in other places practitioners are crowded together in urban centres. At the present time 1500 medical students are studying in Ontario, while the Province needs only 150 new doctors annually.

Dr. T. C. Routley in a brief address, called attention to the various activities of the Association. He stated that the great problem of the day is medical relief, and that the state will have to accept this responsibility before there can be a satisfactory solution of it. During the afternoon, additional clinics in surgery and medicine were conducted by Drs. W. E. Gallie and A. H. Gordon.

Immediately after dinner the following addresses were given,—Dr. Burton T. Simpson, Director of the State Institute for the Study of Malignant Diseases, Buffalo, N.Y., "The responsibility of the practising physician in the control of malignant diseases." Dr. Simpson dealt with the tremendous strides made by medical science in combating cancer and declared that the greatest problem of the moment was to educate the people with regard to cancer. He pointed out that more people of the cancer age are now living than ever before, due to the lengthened life span.

Mr. Lewis Blake Duff, Welland, "A scene hereabouts." Mr. Duff told many interesting incidents connected with the history of the district.

Dr. W. K. Colbeck, of Welland, was nominated *Counsellor* of the District for the ensuing year, and Dr. P. B. Macfarlane, of Hamilton, was elected *Vice-Counsellor.*

District Number Five A.—The annual meeting was held in Newmarket on October 10th.

The District Executive Committee which met at 10.30 dealt with many important problems, including medical relief.

At the afternoon session papers were given by, Drs. R. I. Harris, W. T. Connell, and R. R. MacGregor.

The visiting ladies were entertained in the afternoon by Mrs. D. H. Guy, later joining the doctors at dinner in Oddfellows Hall.

Dr. F. C. Neal gave an excellent address on matters affecting the welfare of the medical profession at the present time. Dr. A. J. McGanity, Vice-president of the Association, spoke briefly on the subject of "Chiselling"; Dr. T. C. Routley on medical relief and a number of other problems of vital interest to the profession, emphasizing the need for united action and strong organization in order to surmount some of the difficulties which we are now facing.

Dr. W. C. Shier, of Uxbridge, was nominated *Counsellor* for next year, and Dr. C. A. Harvie, of Orillia, was elected *Vice-Counsellor.*

Before the close of the meeting, Dr. T. E. Kaiser, of Oshawa, spoke briefly on the history of medicine in the District.

District Number Six.—The annual meeting was held in the Ontario Hospital, Cobourg, on September 28th. Through the kindness of Dr. Kidd, Superintendent of the Hospital, their excellent hall was placed at the disposal of the District.

The morning session commenced at 10.30 a.m., when three histories were presented as follows,—Duodenal ulcer in a male, aged 28, who had had the three usual complications of duodenal ulcer, namely, hæmorrhage, perforation, and cicatricial stenosis of the duodenum; a case of primary lung abscess without known aspiration; a case of carbuncle of the kidney following a carbuncle of the buttocks. Dr. Harris McPhedran, of Toronto, discussed each of these cases, and reviewed the latest scientific work that had been done on these subjects.

Dr. B. T. McGhie, Director of Hospital Services, Toronto, gave a paper on "Mental diseases and mental health," an excellent address which all members of the community who have to do with the training and educating of the young should have heard, because they are the people who should be taught to recognize mental deviations from normal, and in a great many cases taught how to correct them before they have gone too far, or at least bring them to the attention of the proper authority for help.

Dr. Yelland, Vice-Counsellor for District Six, then took the chair, and conducted a short business session at which several subjects were discussed relating to medical legislation, medical publicity in the press, and the care of the indigent.

Lunch was served at the Cobourg Anglican Church. Short addresses were delivered by the Mayor of Cobourg, Mr. McCarthy, M.P.P.; Dr. W. Spankie and Dr. A. E. Ardagh, our representatives to the Ontario College of Physicians and Surgeons for this District. Dr. F. C. Neal gave an excellent address on "Modern medical science and what it had done for modern civilization." Dr. T. C. Routley told of his recent trip through Western Canada and the sorry plight of the medical men in that area; also of his anticipated trip to Ottawa to bring this matter to the attention of the Premier and to point out the necessity for financial assistance

from the Federal Government in the care of the indigent. He then conducted the business meeting.

Drs. Geo. H. Stobie and H. M. Yelland were nominated as *Counsellors* for District Number Six, and Dr. H. M. Yelland was elected *Vice-Counsellor*.

Dr. Frank Dure, of Brighton, Vice-president of the Northumberland and Durham County Medical Society, presided at the afternoon session. Dr. Harris McPhedran gave an excellent address on "Nephritis", tracing the life-history of a nephritic in a very instructive way from a simple ailment in early life through its various phases, to the end-stages of cardiac failure from hypertension. Dr. W. E. Gallie spoke on "Fractures", especially fractures into joints and fracture of the posterior malleolus of the tibia, and how he corrects this very troublesome condition by skeletal traction applied by a Kirschner wire through the os calcis.

Following the afternoon session, a delightful tea was served at the Ontario Hospital by the matron, the wives of the Cobourg doctors, and the nurses.

District Number Seven met at Kingston on October 11th, at the Richardson Laboratory of the Kingston General Hospital. One hundred and ten were present.

The scientific session was held at 2.00 p.m. The program was contributed to by Drs. N. E. Berry, W. F. Connell, G. W. Mylks, and S. W. Houston.

At 4.30 p.m., the District Executive met and discussed several matters of interest to the profession and sent forward a number of resolutions to the general meeting.

At 7.00 p.m. an informal dinner was held at the Cataraqui Golf and Country Club. Dr. F. C. Neal, in his address outlined the aims and objects of the Ontario Medical Association, stressing particularly the obligation of the society of keeping the profession up-to-date. This address was of such interest that it is hoped it may be published in the *Canadian Medical Association Journal*.

Dr. A. J. McGanity, 1st Vice-President of the Ontario Medical Association, then presented to the members the resolutions brought forward by the District Executive.

1. THAT Dr. W. A. Jones, Kingston, be nominated for *Counsellor* for the coming year and that Dr. H. E. Preston, Brockville, be elected *Vice-Counsellor* for the coming year.—*Carried.*

2. THAT the Ontario Medical Association suggest to the Council that in addition to instruction in physical therapy the teaching of manipulative surgery be included in the university course for students.—*Carried.*

3. THAT we approve of the compulsory sterilization of mental defectives.—*Carried.*

4. THAT with a view to increasing the interest in the Association all papers presented at the Ontario Medical Association annual sessions be issued in pamphlet form.—*Carried.*

5. THAT in view of the increasing numbers of patients who are needing medical relief, and in view of the fact that the Provincial Government has provided two-thirds of the funds for this purpose we urge upon the Ontario Medical Association that they ask the legislature to bring pressure to bear upon the municipalities, forcing them to take care of these relief cases.—*Carried.*

6. THAT the brochure on medical publicity issued by the Publicity Committee and approved by the District Executive in principle be passed to the local societies for review and approval.—*Carried.*

Dr. T. C. Routley gave a review of the activities of the Association for the past year and told of the problems which lie ahead of us. His story of the inside workings of the committee meetings of different organizations regarding medical relief was a revelation as to the bizarre knowledge possessed by the public regarding the inter-relations of the doctor and the indigent patient in hospital. The need for more medical publicity was stressed.

A number of the members expressed their views regarding the necessity for increased interest in the Association and also the necessity for a larger membership. It was felt that the problems of the coming year require an immediate increase in membership, with the object of securing the support of at least 90 per cent of the medical men of the province. Plans are being made to attain this objective in this District.

District Number Eight held its annual meeting in Ottawa on October 12th. The morning session was held at the Civic Hospital and the subjects on the program were dealt with by Drs. J. H. Lapointe, Everett Danby, G. W. Dunning, Eugene Gaulin, C. Laidlaw, W. S. Barnhart, S. Evans, and G. A. Campbell, all of Ottawa.

The members were entertained at luncheon by the Ottawa Civic Hospital Commission. After the luncheon Mr. J. J. Lyons and Mr. Norman Smith addressed the gathering on behalf of the Commission, extending to the medical men of this District a welcome at all times to the Ottawa Civic Hospital and assuring the Association of their desire to cooperate with the medical profession in the public interest.

The afternoon session was held at the Chateau Laurier and various subjects were dealt with by Drs. R. E. Valin, A. Ross Alguire, Norman Guiou, S. F. Service, J. J. Heagerty, and H. B. Moffatt.

The annual dinner was followed by forceful addresses by Drs. F. C. Neal and T. C. Routley on matters of vital importance to the medical profession of Ontario.

At the evening session Dr. H. M. Tory, President of the Medical Research Council, gave an interesting and entertaining address on "The relation of the natural sciences to medicine." The Committee on General Purposes also met for a two-hour session and

discussed many matters of great importance to the medical profession of Ontario. This District meeting was well attended, considering that those taking part were all from the District. There was a larger attendance of medical men from outside of Ottawa than usual and this was regarded as a hopeful sign. In all, 111 registered, and, with 11 house surgeons, the total attendance at the meeting was 122.

District Number Nine.—The annual meeting was held at North Bay on September 4th, with a record attendance.

At the morning session at St. Joseph's Hospital addresses were given by Drs. J. C. Meakins, Montreal, Roscoe R. Graham, Toronto, and R. I. Harris, Toronto.

After luncheon addresses were given by Drs. F. C. Neal and T. C. Routley. The balance of the afternoon was spent in recreation. A boat trip was arranged on Lake Nipissing and Trout Lake, and a few of the members enjoyed a game of golf.

Following the dinner at the Empire Hotel Dr. R. H. Arthur, representative of the Ontario Council, gave an address pointing out the work that is being done by the Council. Then followed a short business session at which Dr. A. H. McMurchy, of North Bay, was nominated *Counsellor* of the District and Dr. H. H. Moore, of Timmins, Dr. Alexander Sinclair, of Sault Ste. Marie, and Dr. Peter McGibbon, of Bracebridge, were elected *Vice-Counsellors*. Later scientific papers were given by Drs. J. C. Meakins, A. Grant Fleming, and Roscoe R. Graham.

District Number Ten.—The annual meeting was held in Port Arthur and Fort William on September 6th.

The morning session was held in St. Joseph's Hospital, Port Arthur, and a paper on "Prognosis in cardiac valvular disease" was read by Dr. J. C. Meakins, of Montreal. This was followed by an address by Dr. Roscoe R. Graham on "The tragedy of gastric carcinoma."

After luncheon members returned to the Hospital and heard a lecture by Dr. A. Grant Fleming, Montreal, on "Preventive medicine in general practice." Dr. J. C. Meakins read a very interesting paper on "Rheumatic fever and its manifestations, considered as a specific infectious disease." This was followed by a lecture by Dr. Roscoe R. Graham on "Indications for and types of surgical procedure in duodenal ulcer." Dr. Graham pointed out very clearly the proper application of the different types of operation and the results of his experience with them.

In the evening the President, Dr. F. C. Neal, and his party were entertained at dinner after which the business part of the meeting was dealt with. We listened with a great deal of pleasure to Dr. Neal on "The aims and ambitions of the Ontario Medical Association" and also to an inspiring address from our Secretary, Dr. T. C. Routley.

The Summer School, held at the head of the Lakes last June, showed an attendance of 100 per cent of the men here. The members present are very enthusiastic about these extra-mural courses. The visiting clinicians this summer were Drs. G. E. Wilson and A. J. Mackenzie, both of Toronto.

Medical Societies

The Academy of Medicine, Toronto

On the evening of October 14th, the Academy held a special meeting which was addressed by Mr. Beckwith Whitehouse, Professor of Gynæcology and Obstetrics, University of Birmingham. Mr. Whitehouse was invited to Toronto when it was learned that he was to be in the United States for the purpose of giving an address before the Clinical Congress of the American College of Surgeons. The paper which he presented to the Academy of Medicine was entitled "Some aspects of the menopause," and contained much excellent material on the sex hormones, as well as an abundance of personal observations of a clinical character. It appears in the current issue of the *Journal*.

Dr. Paul Dudley White, of Boston, Mass., addressed the Stated Meeting on Nov. 7th, at 8.30 p.m. on the subject of "The history of the development of our knowledge of heart disease." Dr. White emphasized the value of a knowledge of the etiology in the diagnosis of all types of heart disease. He showed by means of very comprehensive charts the growth of our knowledge of the heart and its diseases from the earliest times, giving the names of all the outstanding men who had through the centuries made important contributions in connection with the anatomy, physiology and pathology of the heart and circulation. Numerous lantern slides were exhibited of frontispieces of important old works, as well as pages from the original publications, such as Heberden's lecture on angina pectoris and Withering's essay on the foxglove.

Dr. White, in the course of his address, referred to the new work of Blumgart, Levine and Berlin in advocating and carrying-out complete extirpation of the thyroid gland in the treatment of chronic incurable cases of congestive heart failure where there is no clinical or pathological evidence of thyroid toxicity. He expressed himself as being very favourably impressed with the results.

An audience of 150 Fellows spent a very profitable evening listening to this address, and we shall certainly look forward to hearing Dr. White again.

GILBERT PARKER,
Honorary Secretary.

The Halifax Medical Society

At a recent meeting of the Halifax Medical Society, Dr. C. H. Archibald, of the Department of Pensions and International Health, Ottawa, read a paper on "Neuro-psychiatry in general practice." The meeting was held at the Nova Scotia Hospital where members of the staff also demonstrated cases of interest.

Montreal Medico-Chirurgical Society

The Montreal Medico-Chirurgical Society held its regular meeting on Friday, November 3rd, with supplementary activities which were somewhat in the nature of an experiment. These consisted in the organization of clinical demonstrations and addresses which were given in the Montreal General and Royal Victoria Hospitals throughout the day, with a dinner in the evening at which business was transacted and speeches were given. The next morning (Saturday) was spent in clinical demonstrations at the Children's Memorial Hospital and the Royal Victoria Maternity Hospital.

The plan was to provide a clinical day and a half for the benefit of the practitioners in the neighbourhood of Montreal, and the results seem to have fully justified the attempt, as the attendance was gratifying. Fortunately, the weather permitted of comfortable driving in and several men came from long distances.

The program was very carefully arranged to cover ordinary problems of diagnosis and treatment, with occasionally interspersed cases of a rare nature.

Another feature of the meeting was the visit to the Society of five invited speakers, Drs. John Oille, A. J. Mackenzie, Geo. Wilson and Roscoe Graham, from Toronto, and L. J. Austin, from Kingston. These gentlemen gave much appreciated clinical addresses in the two hospitals on Friday, whilst Dr. Austin gave a clinic at the Children's Memorial Hospital on Saturday. The Society was also honoured by a visit from Dr. F. C. Neal, of Peterborough, President of the Ontario Medical Association, and Dr. T. C. Routley, General Secretary. Both the latter gentlemen made short speeches at the dinner. The address of the evening was given by Dr. W. W. Chipman, on "Sociological aspects of medicine."

The general feeling was that the experiment was completely successful. It will probably become a regular feature of the annual work of the Society.

Montreal Physiological Society*

SOME OBSERVATIONS ON NITROUS OXIDE ANÆSTHESIA AND ITS EFFECT ON CARBOHYDRATE METABOLISM, by J. S. L. Browne.

Nitrous oxide has been found to be a satisfactory anæsthetic for decapitation and decerebration experiments on cats. It is possible to maintain anæsthesia with the oxygen content of the inspired gas mixture as high as 20 per cent. Nitrous oxide anæsthesia influences the blood sugar level and liver glycogen content in the same way, though to a less degree than ether. The rise in blood sugar content under nitrous oxide can be closely related to the amount of liver glycogen in the animal. The rise is greatly reduced by the removal of one suprarenal gland and the denervation of the other. On starvation the maternal liver glycogen disappears more rapidly in the pregnant than in the non-pregnant animal.

CALCIUM AND PHOSPHORUS METABOLISM IN A CASE OF ACROMEGALY, by W. de M. Scriver and A. H. Bryan.

Calcium and phosphorus metabolism studies were carried out in an advanced case of acromegaly showing generalized rarefaction of the bones. It was found that with a low intake of these elements the balances were negative, becoming positive with a daily intake of approximately 1 gram of calcium and 1.2 gram of phosphorus. The serum calcium and phosphorus were within normal limits. No convincing evidence was found in support of the view that thyroid or parathyroid hyperfunction played any part in the process. It is suggested that in this case the osteoporosis is due to an insufficient intake of calcium and phosphorus during the years of acromegalic overgrowth.

TOXIC EFFECTS FOLLOWING THE INHALATION OF AIR CONTAINING MERCURY VAPOUR, by A. M. Fraser and K. I. Melville.

Experiments were described to show that in normal unanæsthetized dogs, eight hours daily exposure to concentrations of mercury vapour in air, ranging from 20.06 to 3.05 mg. of mercury per cubic metre of air, led to acute, subacute, or chronic (fatal or non-fatal) poisoning, depending upon the concentration of the vapour inhaled. The minimal concentration of vapour which led invariably to chronic toxic effects, was 3.05 mg. per cubic metre. A concentration of 1.89 mg. of mercury vapour per cubic metre of air, inhaled daily under similar conditions for 40 days did not produce any obvious evidence of mercury poisoning.

* Abstracts of papers read at the meeting of October 16, 1933.

Quantitative determinations of the daily urinary excretion of mercury, both in the presence and absence of symptoms of mercury poisoning, indicate that in the case of a dog weighing about 12 kg. at the time evidence of mercury poisoning appeared, the average daily excretion of mercury was about 0.5 mg. If man and the dog are equally susceptible to mercury vapour, one would expect the urine of man to contain 3 mg. per day or less when symptoms of poisoning first become apparent. The variations between the quantities of mercury excreted from day to day are so large that single determinations are in themselves of little value. Finally, experiments concerning the absorption of mercury vapour by the lungs, when the mercury content of the inhaled air is varied, show that with concentrations ranging from 2.91 to 26.18 mg. of mercury per cubic metre of inhaled air the proportion absorbed amounts to 21.3 to 26.6 per cent (average 24.16 per cent) of that inhaled.

The Muskoka Medical Society

A meeting of the Muskoka Medical Society was held in the Medical Library of the Muskoka Hospital for Consumptives on Nov. 1st, 1933, and was addressed by Dr. K. G. McKenzie and Dr. H. H. Hyland of Toronto. As Drs. McKenzie and Hyland were anxious to make this meeting as practical as possible, Dr. McKenzie first demonstrated a new method of doing lumbar puncture. A microscope was at hand, a fluid examined, and some interesting hints given by Dr. Hyland. Following this, a combined address and demonstration was given, first, with a brief discussion of the anatomy and physiology of the brain, followed by more detailed pathology accompanying diseases of the brain parenchyma. Dr. McKenzie had anatomical specimens, also films. The methods used in making a tentative diagnosis were also shown. Dr. Hyland followed Dr. McKenzie, continuing with the consideration of the spinal cord.

The Peterboro County Medical Society

At the meeting of the Peterboro County Medical Society held in Peterboro, on Oct. 12th, Dr. John Oille, of Toronto, gave an address on "The investigation of chest pain." Dealing comprehensively with the subject, the speaker listed the differential diagnosis under two captions—chest wall abnormalities, and visceral causes. One of the six visceral causes mentioned, *viz.*, "real cardiac pains," was subdivided into seven groups—rheumatic myocarditis and subacute bacterial endocarditis; pericarditis; specific aortitis; aneurysm; effort syndrome; angina pectoris; coronary thrombosis. Of these, angina pectoris and coronary thrombosis are the most common. Emphasizing the fact that the diagnosis of chest pain is largely dependent on the interrogation of the patient, Dr. Oille pointed out various features requiring elucidation in the taking of the history such as the location, character and duration of the pain as well as factors which influence it. Special attention was given to angina pectoris and coronary thrombosis. The discussion was opened by Dr. Waite, other members taking part, and in his reply Dr. Oille commented favourably on this feature of the meeting.

The President, Dr. Dobson, made a plea for personal responsibility and interest in the local society on the part of all physicians resident in the county, pointing out that, while the need of organization within the profession at large was generally conceded, such organization should logically begin with the local societies. Noteworthy in connection with the meeting was the visit of five members of the adjoining county societies of Victoria and Durham and Northumberland.

The Valley Medical Society

The Valley Medical Society, at its semi-annual meeting held at Berwick, N.S., passed a resolution to the effect that the appointment of all members of the Provincial Medical Board be made through the Nova Scotia Medical Society. Up to the present, of the 15 members of this Board, 9 have been appointed by the Provincial Government and 6 by the Nova Scotia Medical Society. It was further resolved that the Government be requested to reduce the membership of this Board.

Several papers of interest were read at this meeting notably one by Dr. J. Sponagle, of Middleton, on "The practice of medicine in 1883 and to-day—a comparison." Dr. C. M. Bethune, of the Victoria General Hospital, Halifax, read a paper on "Recent advances in anæsthesia."

The Western Medical Society

The Western Medical Society of the Province met at Yarmouth, N.S., on October 31st, under the presidency of Dr. A. H. Siddall. Among the visitors were Dr. H. G. Grant, Dean of the Faculty of Medicine of Dalhousie University, who gave an address on "Public health as it could be practised by the general practitioner," and Dr. K. A. MacKenzie, Professor of Medicine at Dalhousie University, who spoke on "Functional nervous diseases."

University Notes

Dalhousie University

Dr. A. F. Miller, Medical Superintendent of the Nova Scotia Sanatorium, at Kentville, has been appointed extramural Lecturer in Medicine at the University. He lectures to the final year students on tuberculosis.

The Halifax Community Chest have agreed to donate 2/67ths of the amount raised towards defraying part of the expenses of the Public Health Centre. It is interesting to note that the full-time staff of the University and the part-time clinicians were successful in not only raising their quota towards this fund but that before the campaign closed their amount was over-subscribed. It is regretted, however, that the objective for the whole campaign was not reached.

University of Toronto

Prof. G. F. Marrian has been appointed Associate Professor in the Department of Biochemistry. He is a Doctor of Science of the University of London, and a Fellow of the Institute of Chemistry. He began as a Demonstrator in the Department of Physiology and Biochemistry at the University of London and finally became a Lecturer. His awards are as follows:—Beit Memorial Fellowship for Medical Research; The Mendola Medal, awarded by the Institute of Chemistry of Great Britain and Ireland; William Julius Mickle Fellowship awarded by the University of London.

Profs. F. N. G. Starr and K. C. McIlwraith have retired from the staff of the Faculty of Medicine, University of Toronto, and the title of Professor Emeritus has been given them.

The registration in Medicine, for the session 1933-34 is as follows:—First Year, 138; Second Year, 156; Third Year, 146; Fourth Year, 139; Fifth Year, 113; Sixth Year, 107; Diploma in Public Health, 13; Bachelor of Science (Medicine), 6; Diploma in Radiology, 1; Post-graduate Students, 5. Total, 824.

E. STANLEY RYERSON.

Dr. A. T. Stanton, a graduate of Trinity Medical College of 1899, had the honorary degree of Doctor of Science conferred on him by the Senate of the University on November 10th. Dr. Stanton is Chief Medical Adviser to the Secretary of State for the Colonies. He has also held the position of Director of Government Laboratories in the Federated Malay States and is a Fellow of the Royal Society of Tropical Medicine and Hygiene, London. Dr. Stanton was to have received this degree at the opening of the Banting Institute in 1930, but was unable to be present on that occasion, and the degree has now been conferred upon him *in absentia* by special statute of the Senate.

Dr. F. N. G. Starr has been appointed to the Board of Governors of the University, to take the place of the late W. K. George.

Dr. W. J. Deadman, a graduate in Medicine of the University of Toronto of 1913, has been elected to represent the graduates in Medicine on the Senate of the University, in place of Dr. T. H. Middlebro, who has been compelled to resign on account of ill health. Dr. Deadman is Pathologist at the Hamilton General Hospital and President of the Medical Alumni Association.

Special Correspondence

The London Letter

(From our own Correspondent)

The new session of the medical schools up and down the country has opened in an atmosphere of doubt as to whether things will ever be the same again when all the committees now considering alterations to the curriculum have done their work. Certainly many of the speakers at the opening ceremonies touched upon aspects of the student's life which they would like to see altered and bettered. Prof. Arthur Hall, in an address delivered in Birmingham, was especially illuminating in his account of the way in which the "wall" between the clinic and laboratory has been successfully pulled down in Sheffield. In the scheme at present in use in this city the student begins clinical work (of an elementary type) before he is finished with the anatomy and physiology of the medical school proper. There is close cooperation between the teachers of the "laboratory" and of the "clinical" subjects and, learning how smoothly things work under this scheme, many will echo Professor Hall's remark on medical schools actually attached to hospitals: "It seems almost unthinkable that a future medical man should study there for two or even three of his five years without ever being taken for instruction into the casualty room, the ward, or even the dead-house". Prof. Langdon Brown described to the students at Westminster Hospital the present "return to Æsculapius" which means for him a recognition of the importance of the psychological disturbances, a side of medicine to which the student of the future will have to devote more time. How this is going to be arranged is for the powers-that-be to decide, and meanwhile, as Sir Gowland Hopkins said at the ceremony at Guy's Hospital, the gifts of a scientific education find it difficult "to emerge from the burden of facts which we place on the shoulders of the willing student." Sir Gowland made a striking plea for better teaching in the medical sciences and he would like to see what he terms "synthetic minds" intervene between the scientific specialist and the student.

While the curriculum is probably going to be revised, especially as regards the pre-clinical studies, evidence is accumulating of a change in outlook for the medical research of the country. The last report of the Medical Research Council clearly showed a trend this way and, although this report was genuine in its plea that clinical research had always been in the fore-front of its policy, there is no doubt of the dominance of the laboratory type of research in far too many centres. Sir Thomas Lewis, rightly regarded as one of the pioneers in the fight for putting clinical research back into its proper place, in giving the Harveian Oration before the Royal College of Physicians of London on St. Luke's Day, has followed up his closely reasoned plea for full-time clinical research workers, made earlier in the year, with a striking survey of the scope of clinical science and directions of investigations in this field. To develop fully, according to the orator, Clinical Science—to give it the capital letters it deserves—must become possessed of the traditional intellectual liberty of other services. The focus of academic medicine, he said, must not be allowed to become the teaching of masses of students for professional objects, but must be the fostering of pure learning. That this is likely to be possible in the future depends very much upon the endowments and scholarships with which the young worker can hope to secure a permanent position. Meanwhile such financial aids are increasing in various directions, and a return to Harveian ideals and methods cannot be far removed.

The year's reports of the "National Radium Trust" and the "Radium Commission", recently issued, make rather dull reading for the lay public, as was mentioned in various reviews, but the critical medical mind will welcome several features. For example, a special statistical worker has been appointed during the year to deal with the reports and returns from the various centres in different parts of the country. An interim report is projected in three years' time, and it is hoped that in five years evidence of definite value concerning the use of radium may be forthcoming. This must seem terribly tedious to the layman who expects "results" after four years' existence of the Commission. Nevertheless, the policy is sound, for if radium is ever to be a successful alternative and adjuvant to surgery it has to pass the same criticisms of time as regards cure and alleviation. Another valuable feature of last year's work with radium was the establishment of three "one-gram units", a safe method of obtaining massive radiation, and, as far as the Commission will now go following discontinuance of the controversial four-gram bomb, this form of therapy now being in the hands of a separate organization. The centre at Mount Vernon Hospital for instruction in radio-therapy has also continued its valuable post-graduate teaching work, and helped to get rid of the criticism that "now we have plenty of radium (19 grams in all) but not enough trained people to use it." Steady progress in this difficult field of treatment can be reported for the last year.

ALAN MONCRIEFF.

London.

The Edinburgh Letter

(From our own Correspondent)

The Annual Conference of representatives of Scottish Local Medical and Panel Committees was held in the Scottish House of the British Medical Association, Edinburgh, in the beginning of October. The object of this Conference was to consider matters which specially concern the administration of the National Health Insurance Acts in Scotland. The medical service provided under these Acts is administered in Scotland by the Department of Health, and while the terms of service for doctors, so far as major principles are concerned, are the same as in England, where the Ministry of Health controls the service, there are a very large number of points in which the procedure in the two countries varies.

Dr. John M. Johnston, the pharmacologist to the Department of Health, recently addressed the Scottish Association of Insurance Committees on the subject of "The treatment of insured persons in Scotland." He dealt with statements which had appeared in the press to the effect that the National Health Insurance Scheme did not permit the doctors to prescribe medicines as excellent in quality or as adequate as were obtainable under the conditions of private practice. He pointed out that in the field of rational treatment there neither was nor could be any distinction whatever between "panel drugs" and "private drugs" as regards purity and excellence. Not only was the insured patient specially protected as to the purity of the drugs he received, but he was also at a great advantage over the private patient as regards cost.

Dr. Albert Schweitzer, who is to be Gifford Lecturer on Theology at Edinburgh University in succession to Dr. Edwyn Bevan, is one of the most variously equipped men in the world. He is a Doctor of Philosophy, a Doctor of Theology, one of the world's authorities on Bach, and a brilliant organist. Dr. Schweitzer is the founder and missionary surgeon of the hospital at Lambarene in Central Africa, and his book on his work there, "On the Edge of the Primeval Forest," has been translated into many languages and has run through many editions. He is an honorary Doctor of Divinity and Doctor of Music of Edinburgh University.

The reconstruction of the Medical Curriculum at Edinburgh University is the subject to be considered at a meeting to be held in the University Union on October 31st. This meeting is the first step in a campaign which has for its

object the removal of certain defects in the present curriculum at all the universities, such as the undue proportion of time absorbed by the study of certain of the preliminary scientific subjects. It is also suggested that there should be a reduction in the number of lectures on systematic surgery, medicine, and midwifery, and more practical instruction given in these subjects. The principal speakers will be the Dean of the Faculty of Medicine in St. Mary's Hospital, London, the Chairman of the Scottish Committee of the British Medical Association, an experienced family doctor in Edinburgh, and a young graduate in medicine. The lines of the suggested improvement of the curriculum will follow those laid down in an interim report recently published by a specially appointed Committee of the British Medical Association which is considering the matter. The importance of more instruction in the principles and practice of preventive medicine will be stressed, and also the need for the students having more time to think and teach themselves. So far as the training of the family doctor for his future work is concerned there is much to be said for curtailing the time spent in watching major surgical operations and giving more attention to the minor surgery carried out in the out-patient departments. It is certainly desirable that the young doctor should have adequate practical instruction, but it is also essential that the scientific basis of medical education should be sound.

Edinburgh University is this week celebrating the 350th anniversary of its foundation. A reception will be given by the Magistrates and Town Council. A special graduation ceremony is to take place at which the honorary degree of Doctor of Divinity will be conferred on the Archbishop of Canterbury, and other distinguished Churchmen. The honorary degree of Doctor of Laws will be conferred on the Principals of the three other Scottish universities, on the Presidents of the Royal Colleges of Physicians and Surgeons of Edinburgh, on the Lord Provost of Edinburgh, and on other distinguished men, including Dr. R. C. Buist, of Dundee, a Vice-president of the British Medical Association and a present member of the Scottish Committee. A reception is also to be given by the University and a luncheon by the Graduates Association. The Very Reverend Sir George Adam Smith, Principal of Aberdeen University, is to preach at a commemoration service to be held in St. Giles Cathedral. The students have arranged for a dance and a torchlight procession.

While he is in Edinburgh attending the above celebrations Sir James Barrie, the Chancellor of the University, is to open what has been termed "A Workers' University." Professor Wilkie, of Edinburgh, has generously provided the funds to obtain a suitable building which contains a large hall, a lecture room and six class rooms. There will also be a laboratory for scientific subjects and a kitchen for students of domestic science. The scheme will give an opportunity for education in various subjects at a small fee to working-class students in Edinburgh.

Topics of Current Interest

Myasthenia Gravis

New strength and health for victims of a horrible disease of killing weakness has been found in two drugs, ephedrine and glycine.

The discovery of ephedrine as a cure for the disease was made by Dr. Harriet Edgeworth of Chicago, who was herself attacked by it while a student in medical school. Members of the staff of the Mayo Clinic, who have been using both medicines successfully in treating the ailment, heard Dr. Edgeworth tell her own story.

Three years ago Dr. Edgeworth was bedridden, entirely helpless, dependent on the constant aid of nurses, scarcely able to swallow. Then she discovered, accidentally, that ephedrine gave her renewed strength. Daily doses of six-eighths of a grain of this drug, familiar to hayfever and asthma sufferers, now enables her to "live a life of some usefulness which is comparatively comfortable and pleasant."

"I am dependent on a maid only for dressing, bathing and combing my hair," she told the physicians. "I work about the house, sew, read, write at will, and can get into and out of a car with a little help."

The discovery of the value of ephedrine in her case was dramatic. For over five years she had suffered from the disease, gradually getting weaker and weaker. Different treatments were constantly tried by her physicians.

One of these, a serum treatment, caused a severe reaction. To help her recover from the effects of the serum, ephedrine and epinephrine were given her. She noted a return of strength almost immediately. Within two days she was able, for the first time in months, to sit up in a chair and to eat solid food. While she suspected the ephedrine, her physician ascribed her improvement to the serum treatment.

When she stopped taking the ephedrine, she relapsed to her former state. More serum treatments did not help. Then she insisted on trying the ephedrine again, and from repeated trials, she found that it really did help her.

The ailment from which she suffered is known by the Latin name of *Myasthenia gravis*. It is fortunately not very common. The patient first notices that he is getting very tired. He sees double. Then his jaw muscles become too weak to chew and before long he is so weak he cannot

turn over in bed. No cause has been found for the disease.

At about the time Dr. Edgeworth was discovering the value of ephedrine in treating her own case of this disease, physicians on the staff of the Mayo Clinic learned from a German scientist, Prof. Karl Thomas of the University of Leipzig, Germany, that glycine, a constituent of many proteins, was useful in treating a similar condition in children in which the muscles waste away. There is, curiously enough, no wasting of the muscles in myasthenia gravis. While they did not find the new drug very helpful to the children, the Mayo Clinic physicians decided to try it in cases of myasthenia gravis. These patients were greatly helped by glycine. When Dr. Edgeworth reported her use of ephedrine, the Mayo Clinic patients were given that drug in addition to glycine, with additional improvement.

Investigations are now under way to discover what are the best doses of the two drugs; whether or not they may be used to diagnose cases in the early puzzling stages of the disease; and how they act to overcome the disease. From this may come knowledge of what causes the condition.—*Science News Letter,* 1933, **23**: 67.

Green Lips Tell How Fast the Blood Flows

German physiologists have worked out an ingenious method of estimating the velocity of blood circulation, which depends on the peculiar light reaction of the dyestuff fluorescein. The presence of this dye in the blood is indicated by a greenish colour of the lips, viewed under pure blue light in a darkened room.

In making a test, a small amount of fluorescein solution is injected into the blood stream, and the number of seconds it takes until the lips shine with the greenish light are noted. The method is being used in the study of various circulatory and cardiac disorders, and also in research on the physiological effects of sports. The minimum circulation time thus far observed has been seven seconds; an average circulation time is approximately twenty-one seconds.—*Science News Letter,* July 29, 1933.

Caring for the Victims of Automobile Accidents

The free service of physicians and hospitals has been considerably increased in recent years by the growing numbers of automobile casualties. The number of persons killed or injured in motor accidents seems hardly credible. In 1930 there were 33,000 deaths and over a million injuries from such accidents. In the decade from 1921 to 1930 the number killed was 230,353. It has frequently been said that, were such a volume of mortality and morbidity caused by some new disease, the whole country would be roused and its resources marshaled against the scourge. The economic losses resulting from these accidents are immeasurable. They fall on the victims' families, the physician, the hospital, and all who would normally profit by what the killed and injured would have produced and consumed, had it not been for the accidents. The committee appointed by the Columbia University Council for Research in the Social Sciences to study compensation for automobile accidents has recently made its report of 313 fatal cases which it investigated. It states that in the insured cases payments in sufficient amount to meet the cost of medical care and of funerals were received in 77 per cent. In 11 per cent, such payments were insufficient to meet these costs and in 12 per cent there were no payments at all. Of the cases not covered by insurance, payments sufficient for medical and funeral costs were made in 7 per cent, insufficient payments in 8 per cent, and no payments at all in 85 per cent. In all the cases, fatal and otherwise, studied by the committee, payments sufficient to cover the equivalent of medical expenses were received in 6.6 per cent. On the losses sustained by hospitals incidental to caring for the injured victims of automobile accidents, the committee made several inquiries. Fourteen Philadelphia hospitals furnished information concerning 688 cases. The treatment involved ranged from first aid to long periods of hospitalization. Free treatment was given to 429, or 62 per cent, of these patients. Charges amounting to $16,410 were made in 259 cases. Of this amount, one-third remained unpaid at the end of one year following the dates of accidents. In 1929, nineteen New Jersey hospitals cared for 1,781 automobile accident patients, rendering service in the amount of 22,440 hospital days. Bills for this service totaled $106,089, of which amount 56 per cent, or $59,530, was collected. In 1930 the Ohio Hospital Association found that, of $810,489.14 in hospital bills for service rendered automobile accident patients, $406,761.24, or approximately 50 per cent, was considered uncollectable. As a result of its studies, the committee goes on record as favouring compulsory liability insurance on the part of automobile owners. One provision of its proposed law covers the treatment and care of injured persons. It provides that the costs of medical or surgical care, hospitalization, nursing service, medicines, necessary apparatus and the like shall be borne by the automobile owner responsible for the accident. The charges for such service shall be in keeping with those that prevail in the community in which it is rendered. The injured person would be permitted to choose his physician and hospital, and protection of the car owner or his insurance carrier against fraud and collusion would be provided. If feasible, such a plan would go far toward relieving physicians and hospitals of a burden which society has no right to demand that they

bear. They would still be doing their bit in serving those persons for whose injuries the responsibility could not be fixed on the automobile owners involved in the accidents causing the injuries.—*J. Am. M. Ass.*, 1932, **99**: 1178.

The Homicide Deathrate

The homicide rate during the past two decades has shown almost no change, according to the October Statistical Bulletin of the Metropolitan Life Insurance Company. This can be said of practically no other individual cause of death, whether it be a disease or a form of violence. The deathrate for practically every disease has shown an appreciable change within the period of two decades. For example, the typhoid fever deathrate, in 1931, was 90 per cent below that for 1911; the rate for the four communicable diseases of childhood (measles, scarlet fever, whooping cough and diphtheria) declined to a point 80 per cent below the 1911 figure; tuberculosis and pneumonia were brought down 66 and 46 per cent, respectively. On the other hand, diseases like cancer, diabetes and heart disease now register much higher mortality rates than were in evidence twenty years ago.

Even among the violent causes, other than homicide, there has been more or less marked change. Suicide, in 1931, showed a rate 23 per cent below the 1911 figure. Deaths from drownings and burns have greatly decreased while automobile fatalities have increased continuously up to 1931. Homicide is practically the only cause of death that has shown no upward or downward long-time trend.

It would appear that of all the humanly developed techniques social adjustment alone has undergone little refinement. Great sums of money and boundless scientific effort have been available to combat preventable diseases like typhoid, pneumonia, tuberculosis and the communicable diseases of childhood. At the present time, also, heart disease and cancer are being thoroughly and widely studied in an effort to initiate a downward trend in the morbidity and mortality rates. But no equally well-directed effort is being made to check homicide.—*How to Live*, 1932, **15**: 5.

THE FUTURE OF THE RACE.—Lord Horder spoke on sterilization and birth-control and the future of the race when he opened the post-graduate session of lectures at the Hampstead General Hospital. A national stock-taking, he said, showed some very unpalatable facts. To-day in this country 1 in 120 persons was feeble-minded, 1 in 200 was insane, and 1 in 10 was too dull or too sickly to be capable of being absorbed into industry. The expense to the nation of educating and caring for all these inefficients was enormous, but this was not so serious by far as the fact that the future stock was being continually recruited from these inefficients. The aim of eugenics was to introduce control over the reproduction of unfit types, and to encourage fertility among types possessed of qualities above the average.

Abstracts from Current Literature

Medicine

Angina Pectoris and its Lesions: Statistical Report of 44 Cases with Autopsy. Gallavardin, L., *J. de Médecine de Lyon.*, 1932, **13**: 549.

In angina pectoris there is no doubt that a pathological basis for the condition is not always found at autopsy. However, the anatomical basis is still the most probable on which to explain the condition.

The author describes 44 cases of anginal syndrome, either acute or chronic, but all typical cases, in each of which an autopsy was performed. In this series 19 were found to have a syphilitic aortitis; in 11 the aortitis had encircled the coronary orifices; in 3 there was narrowing of the coronary orifices and co-existing atheromatous changes in the coronaries; and in 5 there was no involvement of the coronaries. In 17 of the 19 the syphilitic aortitis had been diagnosed clinically. These anatomical statistics coincided with purely clinical statistics taken from 500 cases of angina where syphilis was not known to be present in more than 30 per cent. In 33 of the author's cases coronary disease was the most probable cause of the angina, and coronary lesions were found definitely in 25 cases. The other 8 cases were either cases of chronic nephritis with effort pain or with atypical syphilitic aortitis. In no case were coronary lesions found in "paradyspnœic" angina pectoris, in the pain of valvular heart disease, or in some cases of doubtful or atypical anginal syndrome.

The author states that anginal pain is due to a disturbance affecting the cardiac nervous system. The immediate cause of this disturbance does not seem to be found in ischæmic or infarct-like lesions of the myocardium. The coronary lesions of the stenosing type seem especially to predispose toward angina, but are not necessarily the cause. Apart from the ischæmia a possible embarrassment of the return circulation is the most probable pathological hypothesis.

LALL G. MONTGOMERY

Congenital Stenosis (Coarctation), Atresia and Interruption of the Aortic Arch. Evans, W., *Quart. J. of Med.*, 1933, **2**: 1.

Coaretation of the aorta is comparatively rare and frequently unrecognized. This article contains a description of 28 cases, with post-mortem findings on 26, the other two being still alive. The author proposes a new classification, based on the site, nature and extent of the coarctation and on the associated lesions—particularly on the state of the ductus arteriosus. In certain of the types the deformity is such that a large part of the pulmonary arterial blood is side-tracked direct into the systemic circulation and

entirely misses aeration in the lungs; such a condition is incompatible with life for more than a few days. Coarctation of extreme degree is however quite compatible with long life.

The author considers, with Raynaud, that the condition is the result of faulty development and arises during embryonic life. No single collection of symptoms can be said to indicate the diagnosis with certainty. One patient showed "numbness and weakness of both legs whenever he assumed an upright position after reclining for a while." It is suggested that this symptom may prove pathognomonic. Important physical signs include a rough systolic murmur, maximal in the pulmonary area, often with thrill (indicative of patent ductus); evidence of collateral circulation in the presence of tortuous hypertrophied arteries in the neck, chest, back and upper abdominal wall; low femoral blood pressure (the femoral should be 20 to 40 mm. higher than the brachial pressure); retardation of the femoral pulse; perhaps pain in the scapular region may be complained of, due to erosion of the ribs by hypertrophied arteries. Radioscopy is often important in the diagnosis. It may reveal erosion of the ribs; there will be significant changes in the aortic shadow, in that the shadow of the ascending aorta is unduly prominent while the shadow of the aortic knuckle is lost.

Prognosis is always uncertain because of the risk of infection; this risk is greatest with most stenosis. Fifty per cent of fatal cases die from cardiac failure, 20 per cent from bacteriæmia, endocarditis and rupture of mycotic aneurysms, and 15 per cent from bronchopneumonia.

W. F. CONNELL

The Galactose Test in Pernicious Anæmia.
Donath, F., *Klin. Wchnschr.*, 1932, **11**: 1380.

The galactose test of Bauer was carried out by the author in 39 cases of pernicious anæmia. It consists in the oral administration of 40 grm. of galactose and the subsequent examination of the urine for its excretion. In the series reported not a single case excreted any galactose, either at 4 or at 24 hours. In each case the test was repeated during a remission, either spontaneous or induced therapeutically in the usual way, and during these tests galactose was found constantly in the urine. In cases whose remission had been induced by liver therapy the excretion exceeded the normal of 4 grm. in 24 hours.

The author states that it is impossible to say whether the absence of the galactose from the urine in cases of pernicious anæmia is due to defective absorption by the intestine or to faulty renal secretion, or whether there is some abnormality in the carbohydrate metabolism. There is no other condition known in which the Bauer galactose test shows no elimination of galactose, which renders the procedure of definite diagnostic value. The author cites 4 cases in which it was the deciding factor in the diagnosis of doubtful cases.

LALL G. MONTGOMERY

Surgery

Cardiospasm: Diagnosis and Treatment.
Moersch, J., *Ann. of Surg.*, 1933, **98**: 232.

Probably no disease responds more satisfactorily to proper treatment than cardiospasm. The course of the disease may be divided into 3 stages: (1) cardiospasm without regurgitation of food; (2) cardiospasm with immediate regurgitation of food; and (3) cardiospasm with dilated œsophagus; the food is retained in the dilated portion and is regurgitated at irregular intervals.

The onset is insidious. Dysphagia, the prominent and first symptom, is usually intermittent. A sense of lagging is first noticed, later of actual obstruction under the lower end of the sternum. This impediment may be noticed only when the patient is under emotional strain or has swallowed too rapidly. The difficulty becomes more pronounced with time. The dysphagia is likely to occur early in the meal. At first the obstruction can be overcome by swallowing several times in rapid succession, or by taking several swallows of water in rapid succession. Later it is necessary to swallow several glasses of water, close the glottis, and compress the thorax. The symptoms tend to increase until there is difficulty with every meal.

Gradually the œsophagus dilates above the point of obstruction, and also may lengthen and by kinking lead to increased dysphagia and stagnation. Food will then be limited to soft and liquid foods taken in small amounts and washed down by large amounts of water. It may be necessary to empty the stomach during the course of a meal.

Pain is sometimes a prominent symptom. It varies from slight discomfort to severe colic. It usually comes on during the course of a meal, and lasts until the œsophagus is empty. Hiccup and dyspnœa are infrequent symptoms.

Radiologically, a persistent fusiform narrowing of the lower end of the œsophagus with obstruction and dilatation is diagnostic. Œsophagoscopy should always be resorted to if there is any doubt as to the diagnosis. It is not of much help in cases of cardiospasm.

Fluid diet, effervescent drinks, bromides and atropine may afford temporary relief.

The treatment recommended by the author consists first in the passage of a twisted silk thread into the stomach; blind bougienage is dangerous. At least 5 yards of thread should be swallowed, at the rate of one foot per hour. In bad cases some small shot may be tied on the end. The thread is used as a guide to pass a No. 41 French sound. The distance from the

teeth to the obstruction is noted. Next a No. 60 French sound is passed. Further dilatation is usually necessary and is carried out with a Plummer hydrostatic dilator. This is carried a day or two after passing the sound. Gradual dilatation permits of better œsophageal drainage, promoting healing of the ulcerated mucosa. This technique has been used at the Mayo Clinic since 1926. There has not been a fatality in almost 400 consecutive cases. In 71 per cent of cases in which dilatation was carried out relief of symptoms was effected immediately.

STUART GORDON

Perforation of the Gall Bladder in Acute Cholecystitis. Judd, E. S. and Phillips, J. R., *Ann. of Surg.*, 1933, **98**: 359.

Perforation of the gall bladder is unusual. It is usually confused either with inflammation in a high-lying appendix, perforation of a peptic ulcer, or with acute pulmonary disease. The gall bladder rarely perforates in the first attack. Adhesions, the result of this attack, usually result in the localization of the process when perforation occurs. Free perforation into the peritoneal cavity is very rare. The gall bladder rarely bursts from over-distention; perforation is probably always the result of ulceration or local gangrene.

The authors report 61 cases of acute cholecystitis in which operation revealed perforation. In 2 of these there had been extravasation into the general peritoneal cavity; the remainder were well localized. Forty-three of the patients were women. The majority were over fifty. All had had symptoms referable to the biliary tract. Forty-eight had had acute symptoms previously, 8 having undergone cholecystostomy. The average time from onset of the acute attack to operation was 20 days. Colic was the chief and commonest symptom. Sixteen cases showed some degree of jaundice. Tenderness in the upper right quadrant was a constant finding. A mass in the region of the gall bladder was present in 27 instances. Localized peritonitis was evident in all. Gangrene was present in 11 cases at cholecystectomy. Stones were found in 56. Acute cholecystitis without stones is uncommon. Stones in the common duct were present in 9 cases.

The severity of the symptoms does not always indicate the extent of the pathological process. Perforation and abscess-formation may occur without pain.

Cholecystectomy was done in 48 of the 61 cases, cholecystostomy in the remainder. Five of the former died and 1 of the latter. Half of the deaths were associated with pulmonary complications. Perforation with leakage into the abdomen is probably more frequent than these figures indicate, as such patients are too sick to travel. Of the two cases reported 1 recovered. Immediate operation is imperative. When infection is localized an abscess results. Cholecystostomy or cholecystectomy, with drainage of the abscess, is then indicated. Perforation into an adjacent viscus may occur. This happened in 7 of the 61 cases. The duodenum was involved in 6, the colon in 1. Rupture through the abdominal wall occurred in 2 patients, both of whom had been operated on previously.

STUART GORDON

Gynæcology and Obstetrics

Pregnancy and Labour Complicated by Myomatous Tumours of the Uterus. Campbell, R. E., *Am. J. Obst. & Gyn.*, 1933, **26**: 1.

The incidence of myoma in 32,870 pregnant women was 0.43 per cent, or 142 tumours were diagnosed. In 82 of these the tumours were large enough to complicate pregnancy, labour and the puerperium. They were more frequent in the coloured race and in primiparæ. The liability to fibroids was greatly increased between the ages of 35 and 45 years. Sterility, premature labour and immature birth were closely associated with the fibroid complication. Immature birth and premature labour were observed in 25 per cent of the cases. Mild degrees of discomfort were noted during pregnancy; impelling indications frequently resulted in obstetrical and surgical operative procedures. Labour was often tedious, painful and prolonged. Early rupture of the membranes took place in 37 per cent of the cases; hæmorrhage in 31 per cent; adherent placenta was observed 8 times. Twenty-six of the cases showed poor involution of the uterus. Infections were not uncommon.

Major surgical operative interference was necessary in 31.6 per cent of the cases. Obstetric operative procedures were performed in 14.6 per cent. The total operative incidence was 46.2 per cent. Necrosis was found in 75.8 per cent of the tumours during pregnancy, as compared with an incidence of 7.81 per cent in non-pregnant women, a ratio of 9:1. Infection is not sufficiently emphasized in the literature as an important factor and an added danger in the fibroid complication; this series substantiates such a statement. The gross fetal mortality for the series of 82 was 28 per cent. The gross operative fetal mortality was 33 per cent. The gross maternal mortality was 3.65 per cent.

A better understanding of the obstetric principles involved in the fibroid complication, with a replacement in certain patients of an attempt at delivery *per vaginam* by the surgical operative route, notably Cæsarean section or section and hysterectomy, has led to an important evolution in treatment. A clearer conception of the relative importance of necrosis and infection, with early recognition and proper treatment, has saved many lives. Ability to evaluate

and treat the less serious, though important, complications such as early rupture of the membranes, inertia uteri and subinvolution has added greatly to a favourable prognosis. Prevention of unnecessary obstetric manipulation has lessened a considerable risk. In the last analysis a complication of pregnancy has been reduced from an unfavourable prognosis for both mother and baby to one in which a more favourable outcome may be predicted.

ROSS MITCHELL

A Simple Procedure of Ascertaining the Sex of the Newborn, where the Diagnosis is Difficult, due to Genital Abnormalities. Witherspoon, J. T., *Am. J. Obst. & Gyn.*, 1933, **25**: 921.

The very simple procedure of catheterizing whatever genital orifice that presents itself is offered as an additional aid in the determination of the true sex. If urine is obtained the orifice is undoubtedly the urethra, and the child can safely be called a male. If urine is not immediately obtained, not even after a second catheterization, or if urine escapes around the base of the catheter, the child can be correctly diagnosed a female, since the orifice must lead into the vagina.

ROSS MITCHELL

Ophthalmology

Some Observations on the Visual Field in Various Forms of Vitamin A Deficiency. Kiang, S. M., *National M. J. of China*, 1932, **18**: 827.

In 6 cases of vitamin A deficiency of various forms and severity there was found concentric contraction, not only of the blue but also of the red and white fields. In two of the cases the visual field on admission showed inversion of the blue and the red, and then the intersecting of the blue and red fields, and finally the blue field becoming larger than the red. In the other two there was intersecting of the blue and red fields on admission, and then the blue became larger than the red, while in the remaining two, there was inversion of the blue and red fields on admission, and intersecting of blue and red fields on discharge. The length of time from the intersecting of blue and red fields to the time when the blue fields became larger than the red was ten days. In view of the clinical symptoms no definite relationship between the visual field on the one hand and the clinical symptoms on the other can be expressed and figured, but as a whole the contraction of the colour visual field, especially blue, is proportional to the other clinical symptoms of vitamin A deficiency, and therefore the changes of the colour visual field, may be regarded as one of the main symptoms of the eye in vitamin A deficiency in adults.

S. HANFORD MCKEE

A Contribution to the Study of Dark Adaptation in Night-Blindness caused by Avitaminosis. Soudakoff, P. S., *National M. J. of China*, 1932, **18**: 960.

Eight patients affected with vitamin A deficiency were studied in regard to the change of the primary and secondary adaptation during the course of their disease. Both primary and secondary adaptation were found lowered in all the 8 cases and in 5 of them greatly reduced. On admission, the primary adaptation ranged between 1/9 and 1/800, whereas the secondary adaptation taken thirty minutes after seclusion in a dark room ranged between 1/9 and 1/20000. The decrease of primary and secondary dark adaptation was more marked than was found in similar cases in western countries. The lower the primary adaptation, the more defective was the secondary adaptation. Repeated examinations of these patients at intervals of from three to five days, showed gradual increase of sensitiveness to light, both initial and final. The curve of adaptation was Birch-Hirschfeld's type III. The type of the curve of the secondary adaptation seems to depend exclusively upon the degree of affection of the neuro-epithelial layer in vitamin A deficiency.

S. HANFORD MCKEE

Anæsthesia

Short Surgical Anæsthesia with Intravenous Sodium Evipan (a new barbiturate). Sebening, W. and Beck, W. C., *Anæsthesia and Analgesia*, 1933, **12**: 213.

The authors report the results obtained in 200 cases from the surgical clinic of the University of Frankfort-on-Main, Germany. Sodium evipan (N-methyl-c-c-cyclophenyl-methyl barbituric acid) a white tasteless, crystalline salt, furnished as a concentrated solution in methyldiglycol, is diluted with water to make a 10 per cent solution, and administered intravenously, producing sleep in a very few seconds. The dosage is controlled by the patient's reaction, he being instructed to count aloud while the solution is slowly injected. When he ceases counting the amount already injected is taken as one-third to one-half the total dose, according to the depth and duration of anæsthesia desired. By the fractional method of administration, *i.e.*, the injection of an amount sufficient to initiate sleep and of repeated smaller injections thereafter, anæsthesia has been prolonged for one and one-half hours. The duration of sleep from the single injection method varies from 5 minutes to 2 hours. In only 4 instances was it less than 10 minutes, and in only 10 cases was it longer than 35 minutes, the average being 20.05 minutes. The anæsthesia produced is sufficient for the incision of abscesses and felons, excision of carbuncles, reduction of fractures, extraction of teeth, and operations about the nose and

mouth. Repeated administration does not result in the acquisition of a tolerance for the drug. Extremes of age are not a contraindication, as it has been given to two children under 6 months and one adult of 82 years. Children have a remarkably high tolerance. There were no fatalities in these 200 administrations, but Anschütz at Berlin, in April, 1933, reported 8 deaths in 6,500 administrations. In all but one of these there was evident overdosage. Definite contraindications for its use are not as yet known, but liver damage delays the breaking down of the drug. The dosage should be reduced 30 to 50 per cent in very obese, anæmic, or cachetic patients. After administration of the drug, the blood pressure usually falls slightly, the pulse rate does not vary more than 5 to 10 beats, and the respiration is rarely affected, although the mandible must be held forward to maintain a free airway. Shivering occasionally occurs, but can be minimized by reducing the rate of injection. Post-anæsthetic excitement is rare, as are nausea and vomiting. There is no retrograde amnesia.

The author's conclusions are:—

1. Evipan fills a need for a short non-inhalation anæsthetic where the administration of an inhalation anæsthetic is contraindicated.
2. It can be administered intravenously, the dosage being determined by the reaction of the patient.
3. The duration of the narcosis can be controlled to a certain extent by the fractional method of administration.
4. It produces sleep very rapidly.
5. The drug is detoxified with remarkable rapidity.
6. It is unattended by excitement reactions, and only rarely by nausea and vomiting.
7. Local venous thrombosis and sloughing are very rare.
8. It is not an ideal basal anæsthetic, avertin being considered better.

F. A. H. WILKINSON

Hygiene and Public Health

The Presence of Lead Dust and Fumes in the Air of Streets, Automobile Repair Shops and Industrial Establishments of Large Cities. Bloomfield, J. J. and Isbell, H. S., *J. Indust. Hygiene*, 1933, **15**: 144.

Studies in the United States, England and Australia have shown the presence of lead in the fæces of individuals with no history of exposure to lead. Kehoe, in particular, in the United States has demonstrated lead in the urine of presumably normal individuals. The question as to the source of the lead is a puzzling one. In the present study the authors have examined large samples of air from city streets, from automobile repair shops and from industrial plants where no special lead hazard existed. The air was collected with the Greenburg-Smith Impinger apparatus and analyzed by a modified Fairhall method, suitable care being taken to insure that glassware and reagents were lead-free. In all 78 samples of air were analyzed, 25 from automobile repair shops, 28 from the air in city streets at congested points and 25 from various industrial plants. Eighty-six per cent of the samples contained less than 0.2 milligrams of lead in 10 cubic metres of air. All the street samples contained less than 0.4 milligrams per 10 cubic metres and only 2 samples (from automobile repair shops) contained more than 0.4 milligrams per 10 cubic metres. The quantity of lead recovered was very minute, but when it is realized that lead has a cumulative action it is possible that even minute quantities may accumulate in the body.

FRANK G. PEDLEY

The Effects of Viosterol on the Excretion of Lead. Flinn, F. B. and Smith, A. R., *J. Indust. Hygiene*, 1933, **15**: 156.

It is well known that large doses of viosterol cause hypercalcæmia and increased elimination of calcium from the body. Since the metabolism of lead and calcium is similar it is reasonable to suspect that an increased elimination of lead would occur following the administration of large doses of viosterol. Six cats were given a daily dose of 100 milligrams of lead each in milk for 49 days. Three of the cats were then fed 20 drops of viosterol (250 D) for 15 days and 3 were kept as controls. The excretion of lead in the fæces was reckoned in the two series and it was found that the excretion was 10 times greater in the cats which had received viosterol.

FRANK G. PEDLEY

A Promising Health Year in Canada. *Statistical Bull., Metropolitan Life Insurance Co.*, 1933, **14**: 10.

The prospect of registering a new minimum death rate in Canada in 1933 is very good, according to the records of the Industrial Department of the Metropolitan Life Insurance Company. The total death rate for the first six months of 1933 was 770.2 per 100,000 compared with 807.6 per 100,000 for the corresponding period of 1932. The figure for 1932 was the lowest recorded by the Company.

Diphtheria, tuberculosis, diarrhœal conditions, typhoid fever, measles and accidents are the conditions showing the greatest reductions in mortality. Diabetes, which for some years has been increasing so far as mortality records show, is lower in the first six months of 1933 than in the same period in 1932, the respective rates per 100,000 are 16.1 and 12.6. It is noteworthy too that during the last two years the death rate from automobile accidents has shown a striking decrease.

FRANK G. PEDLEY

Pathology and Experimental Medicine

The Present Status of Diseases of the Hypophysis. Putnam, T. J., *New Eng. J. of Med.*, 1933, **209**: 487.

The extirpation of the posterior lobe of the hypophysis leads to no permanent serious symptoms, and no syndrome due to injury of it is recognized in man; nor do tumours arise from it. Diabetes insipidus may be due to damage of this portion of the gland, but the evidence is somewhat conflicting.

Extirpation of the anterior lobe in young animals leads to complete cessation of growth. Atrophy of the genitals and all glands of internal secretion is produced in older animals; also disturbances in the growth of hair and healing of wounds. There is a tendency to hypoglycæmia. In human beings in whom an infarction of the anterior lobe has occurred growth is inhibited, the epiphyses fail to close, and sexual development does not occur. The mind is unaffected. Adiposity and somnolence form no part of the syndrome.

It seems certain that the growth-promoting extract is secreted by the acidophile cells from which the acromegalic adenoma is derived. Also a substance may be extracted which produces oestrus in immature females of various species. Its effects are similar to those of the hormone, demonstrated in the urine of pregnant women, which gives the Aschheim-Zondek reaction. This hormone is probably produced by the basophile cells of the anterior lobe.

Several other hormones have been described in extracts of the anterior lobe. These include a substance controlling lactation, another controlling the growth of the thyroid, and a third controlling the metabolism of fat. The exact status of all of them is uncertain.

Three types of tumour arise from the hypophysis itself, derived from the three types of cells which can be demonstrated in the anterior lobe. The commonest is the chromophobe adenoma. These tumours produce their effects by pressure on the secretory portion of the gland and surrounding structures; for example, on the optic tract, causing hemianopia, the hypothalmus, causing adiposity and diabetes insipidus, and the sella turcica, causing a deformity which may be recognized in the x-ray. The next most common tumour is the acidophile adenoma, causing acromegaly. This is smaller than the chromophobe adenoma. Still smaller are the basophile adenomas, only recently recognized. The syndrome of vascular hypertension, hirsutism, moderate adiposity, characteristic skin changes, and osteoporosis, is apparently to be ascribed entirely to the internal secretion of the adenoma. Finally, there is a large group of tumours arising from structures about the hypophysis, such as cysts of the craniopharyngeal duct, the meningiomas and rare carcinomas. These have no internal secretion, but may compress the anterior lobe in addition to damaging the optic tract, hypothalmus, and neighbouring structures.

We possess one glandular extract which is specific for one symptom, namely pituitrin, which relieves diabetes insipidus for a few hours at a time. The so-called anterior lobe extracts have not proved effective in relieving the symptoms of known pituitary insufficiency.

We are entirely without any means of supplying the growth-promoting substance to human beings in need of it. The extracts which produce such dramatic effects when injected into animals are still too crude for administration to patients. Moreover, 100 c.c. per day would be required. The growth-promoting substance is ineffective when given by mouth. None of the commercial preparations contain more than traces of growth-promoting substance.

LILLIAN A. CHASE

Aspects of Carbohydrate and Fat Metabolism. Best, C. H., *Ann. of Int. Med.*, 1933, **7**: 145.

The effect on blood sugar can be detected within one or two minutes after sugar enters the duodenum. The rise in blood sugar elicits an increased liberation of insulin from the islet cells, and a demonstrable increase in output of insulin from the pancreatic vein. The increased supply of insulin increases the formation of glycogen in the liver, inhibits the formation of sugar from protein and probably also from fat in the liver, increases the rate at which sugar is converted into glycogen in the muscles, favours the formation of glycogen from lactic acid, and thus accelerates recovery of muscles from exercise, increases the oxidation of carbohydrate, and decreases the fatty acid content of the blood and tissues.

It has been found possible in the diabetic animal, by a high fat diet, to decrease glyconeogenesis to such an extent that the blood sugar sinks to normal. The liver becomes intensely fatty, and the animal may die suddenly. Thus an apparent beneficial effect may be produced in the diabetic by a procedure which is fundamentally injurious.

Depancreatized dogs, receiving sufficient insulin and fed on a diet of meat and sugar, will in time develop fatty infiltration and degeneration of the liver. The feeding of lecithin has been found to prevent the development of fatty livers in these animals. The active constituent of lecithin is choline.

The apparent beneficial effect of a very high carbohydrate diet may be partly explained by the fact that the high carbohydrate intake causes an increased liberation of insulin from the pancreas, which, if it can be maintained, may be considered harmless, and by the fact that with the increased ingestion of carbo-

hydrate, the glucose equivalent of available insulin rises to a certain point before reaching a constant level.

H. GODFREY BIRD

Therapeutics

Principles of Treatment in Pulmonary Tuberculosis. Burrell, L. S. T., *Brit. M. J.*, 1933, **1**: 731.

The author protests against the idea that delicate children or adults are particularly liable to become consumptive. The importance of a bad environment (the presence of open tuberculosis in a household) is emphasized.

The various stages of tuberculosis require widely different treatment. In the "alarm" stage of non-clinical pulmonary tuberculosis, a definite diagnosis has been made on the evidence of pleural effusion or hæmoptysis alone. The ordinary rules of health should be observed and the patient closely observed for at least three years. This includes regular x-rays. Pleural effusion definitely indicates the need for a course of sanatorium treatment, *i.e.*, "the judicious combination of rest, gentle exercise and routine so that life is perfectly regular." The next, or early progressive stage, is one of "attack"; cases in this stage progress fatally if untreated, but with proper management they usually do extremely well.

1. In the resting febrile, acute, stage, absolute rest is indicated. For unilateral disease with crepitations, artificial pneumothorax should be induced at once. With bilateral disease, pneumothorax may occasionally be bilateral, or may be done on the worst side, with sanocrysin for the other. Rest in bed should be for at least three months, to be followed by sanatorium treatment.

2. In the subacute stage, the patient is "resting afebrile, ambulant febrile." He should be kept in bed and treated as in the previous stage.

3. The chronic or afebrile stage may follow the preceding or come on insidiously. Sanatorium treatment is indicated, *i.e.*, for cases with cough and tubercle bacilli but no fever.

In treatment, the psychological element is most important, though usually neglected. If the patient has great faith in a certain sanatorium he should certainly be sent there. Improvement indicates increased exercise; failure to improve, or relapse, necessitates further rest, artificial pneumothorax, sanocrysin, phrenic evulsion or other treatment. If arrest is secured, a few months at sea or in the country may consolidate the cure. The patient should be thereafter observed for at least two years.

The late progressive, chronic consumptive, stage is usually hopeless, although the patient may live for several years, and very occasionally does very well. Anyone with active disease after two years may be said to belong in this stage. It is to prevent patients reaching this point that strict treatment is so vital in the earlier phases of the disease. While few of these patients recover, much may be done by active treatment. In hopeless cases, however, confinement to sanatorium or drastic treatment should not render the last years of the patient irksome. Treatment depends on the amount of fibrosis occurring. Artificial pneumothorax will benefit some of the more exudative cases; it is definitely harmful in very fibrotic cases, which however benefit from phrenic evulsion or thoracoplasty. Shock therapy will help some of these cases.

There is a final, chronic fibroid stage, usually the outcome of one of the preceding phases, in which the patient may enjoy some years of nearly or completely good health. Treatment is only indicated if there is steadily increasing fibrosis, repeated hæmoptysis, or recurrent febrile attacks, when phrenic evulsion or thoracoplasty are the best procedures.

W. FORD CONNELL

The Value of Artificial Pneumothorax in Pulmonary Tuberculosis. Shaw, C., *Quart. J. Med.*, 1933, **2**: 179.

A series of 267 cases of pulmonary tuberculosis treated by artificial pneumothorax, at an out-patient clinic of the Brompton Hospital during the period of 1922-1932, is compared qualitatively with material from the Medical Research Council Special Report. Amongst early cases, there was no mortality, as opposed to 23 per cent for males and 13.5 per cent for females in sanatorium experience; in the moderately advanced, the mortality is 10.3 and 10.9 per cent, respectively, for males and females in the present series, against 45.3 and 42.7 per cent in sanatorium; in the far-advanced, the mortality reached 46.9 and 48 per cent, but is 74.4 and 67.6 per cent respectively in the sanatorium.

As regards working capacity and residual symptoms, of the early cases 93 per cent, in the moderately advanced 79 per cent, and in the advanced cases 36 per cent of the total number of cases originally assigned to each group are doing, or are fit for, full work; whilst 91, 76, and 32 per cent respectively are free from symptoms or have only a slight cough and negative sputum. One hundred and eighty-four cases went to a sanatorium after the induction of pneumothorax, and 83 were treated by pneumothorax alone. The percentage mortality in Groups I and III, is almost identical, but in Group II (moderately advanced) the pneumothorax plus the sanatorium shows a slightly smaller one.

Because an analysis of cases shows clearly that the mortality varies directly, and the ultimate working capacity and residual symptoms inversely, with the degree and severity of the disease at the inception of the treatment, the

authors suggest that a pneumothorax should be induced in an earlier type of case than the conventional.

L. J. ADAMS

The Treatment of Pulmonary Tuberculosis by Alcoholic Injection of the Intercostal Nerves after the Method of Leotta. Rindone, A., *Rassegna internaz. di clin. e terap.*, 1932, **13**: 473.

Alcoholic injection of the intercostal nerves by the method suggested by Leotta is advocated by this author as the method of choice in cases in which artificial pneumothorax is rendered impracticable as a consequence of pleural adhesions. In such cases it is said to be preferable to either phrenicotomy or thoracoplasty. This form of treatment may be applied to any of the clinical and anatomical forms of tuberculosis where either unilateral or bilateral pneumothorax is indicated. Even in cases where this method has been used on both sides simultaneously it has been well tolerated and has never been observed to disturb the stability of the mediastinum. Full benefit is not obtained till some weeks after the treatment has been instituted, and in many cases there is a short time after the induction of the paralysis when the symptoms tend to become exaggerated. The most dramatic results are obtained by the use of this method for the control of intractable pulmonary hæmorrhage.

The injections are easily done. A needle is inserted about 3 to 4 centimetres from the vertebral spinous processes and at the inferior border of the rib, in such a way that it follows the intercostal space. Novocaine is injected first, and then when the superior intercostal ligament has been passed alcohol is injected. Four or 5 nerves are injected in this way, one or two at a time, and usually involving the second or third to the sixth. The immobilization is usually maintained for 2 years or less, and it is considered advisable to renew the injections every 2 or 3 months.

LALL G. MONTGOMERY

"An apple a day keeps the doctor away" possesses nothing of merit except the rhyme. Many a green apple has brought the doctor in a hurry. A good, medium-size, ripe apple contains about 96 calories and will digest in an hour and a half. It supplies sugar, calcium, phosphorus, and iron. These facts indicate that it is suitable for human food. The apple also contains a considerable amount of vitamin C and some vitamins A and B. It has no special curative or disease preventive qualities but is a desirable part of an average diet.

Obituaries

Dr. Donald John Armour, a native of Cobourg, Ont., who became one of Great Britain's noted brain and nerve specialists, died suddenly from coronary thrombosis at a meeting of the Medical Society of London on Oct. 23, 1933. He collapsed as he finished delivering a speech.

The fifth son of Hon. John Douglas Armour, former Chief Justice of Ontario. Dr. Armour had won such honours as C.M.G. (1918), F.R.C.S. (Eng. 1900), M.R.C.P. (Lond. 1897), and B.A., M.B. (Tor. 1894).

Dr. Armour received his education at Upper Canada College, the University of Toronto and University College, London, Eng. He was the Arris and Gale lecturer in 1904-5 at the Royal College of Surgeons and was the Jacksonian prize essayist at that noted institution in 1906. He was Hunterian Professor of Surgery and Pathology at the Royal College of Surgeons (1908), and Lettsomian Lecturer at the Medical Society of London (1927). He was elected president of the Medical Society of London for 1929-30.

Dr. Armour was surgeon to the National Hospital for Nervous Diseases, an honorary lieutenant-colonel and consulting surgeon to the West London Hospital as well as to many other institutions. He was surgeon specialist to numerous military hospitals during the Great War. Among his publications are "Surgical Diseases of the Skull, Brain and Spinal Cord," and "Principles of Spinal Surgery."

He is survived by his widow, Mrs. Louise Armour, the daughter of Capt. Ormsby McKnight Mitchel of the United States Army, a son and two daughters. Hon. Mr. Justice Eric Armour, of Toronto, who was appointed a judge of the High Court of Ontario this summer, is a brother. Mrs. Edmund Bristol and Mrs. Arthur D. Miles, also of Toronto, are sisters.

Many distinguished medical men, society people, and prominent Anglo-Canadians attended a memorial service held for Dr. Armour at Marylebone Parish Church October 26th. The service was conducted by the chaplain of Westminster Hospital, Rev. H. Burn.

Family mourners included Mr. Donald Armour, Jr., and his wife, Mr. and Mrs. Jephcott Tanburn, Mr. and Mrs. Weimar Cross, the two ladies being daughters of the late surgeon. Mrs. Armour was not present.

Others attending were the High Commissioner and Mrs. Ferguson, the Agents-General of Ontario, Quebec and British Columbia, Sir George and Lady Badgerow, Al. Nunns, representing the Canada Club; G. H. Ward, representing the Canadian Chambers of Commerce; Sir Frederick and Lady Williams Taylor, Sir George MacLaren Brown, H. P. Biggar, of the Canadian Archives; Mr. Bishop Harman, treasurer of the British Medical Association; Warren Low, president of the Royal Society of Medicine; Sir John Thomson Walker, representing the Medical Society of London; Lord and Lady Greenwood, E. R. Peacock, Mrs. Rous Mallory, Rodney Prizer, representing the American Society in London, and Mrs. W. G. McIntosh, who was Dr. Armour's nurse during the war. The Canadian Pacific and the Canadian National Railways and many London hospitals and nursing homes were also represented.

William Howard Dickson, M.D., C.M., F.R.C.P.(C.) With the untimely death, at the age of 55, of William Howard Dickson at his late residence in Toronto, on October 28, 1933, the medical profession of Canada lost a distinguished member, and the science of radiology one of its brightest minds. Cardiac trouble, the original onset of which occurred in February, 1932, was the cause of death.

Born in Pembroke, Ont., in 1878, Dr. Dickson was the only son of the late Dr. William Welland Dickson, of that town. After graduating from McGill Univer-

sity in 1904 he spent several years in general practice in Western Canada, being in charge of the medical services of the Granby Mining and Smelting Company whose hospitals were located at Phoenix and Anyox.

Impressed by the increasing importance of the x-ray as a diagnostic agent Dr. Dickson forsook general practice to devote his life to the study of the young science of radiology. Private study was succeeded by two years of intensive work with the clinic of Dr. Lewis Gregory Cole, of New York City, whose devoted disciple he became. Returning to Canada fifteen years ago, Dr. Dickson was invited by Dr. G. E. Richards, Director of the Department of Radiology, Toronto General Hospital, to take charge of the gastro-intestinal section of that laboratory. His thoroughness and accuracy in this exacting field of diagnosis was rewarded by a reputation among the profession which every year grew more solid and widespread. He had, indeed come to be regarded as something of an oracle in his chosen line. A tribute both to his ability and humanity, as voiced by Dr. William Goldie, will be echoed by all the medical associates who knew him best:—"In his work he was our leading light; with his simplicity and intellectual honesty, that clear-acting brain brushed aside the unessentials, to point out the way or face the fact with 'We do not know'. He was the rare combination of expert and man that impressed and influenced everyone with whom he came in contact."

With characteristic enthusiasm, but a few months ago, Dr. Dickson, assisted by a group of keen junior graduates, commenced some fruitful research on the use of thorium dioxide as a means of enlarging the diagnostic field of radiology. Following an exhaustive period of animal experimentation, he was able to apply his methods with safety and notable success to clinical cases. A comprehensive summary of such findings—the first one made, based on a convincing number of cases—was prepared by him, and appeared in this *Journal* in August, 1932. On this work, and more particularly on his gastro-intestinal investigations, a mass of detailed material had been gathered together by Dr. Dickson, to be embodied, had his life been spared, in a book of considerable scope.

Tucked in a corner of his writing pad, a few lines of touching significance from Kipling's poem "If" were found after his passing:

"If you can force your heart and nerve and sinew,
To serve your turn long after they are gone,
And so hold on when there is nothing in you,
Except the will which says to them, 'Hold on!' "

Dr. Dickson was a member of the York Club, the Royal Canadian Yacht Club, the Royal Society of Canada, the Æsculapian Club of Toronto, the Radiological Society of North America, and of the Theta Kappa Psi Medical Fraternity, and was an esteemed member of the Library Committee of the Academy of Medicine, Toronto. He is survived by his widow and two daughters, Dorothy and Evelyn; and by three sisters, Mrs. A. T. Mackie, of Toronto, and Mrs. W. H. Williams and Miss Ada D. Dickson, of Pembroke.

G. E. RICHARDS

Dr. Robert John Gardiner, of Kingston, Ont., died from a heart attack on September 30, 1933. Dr. Gardiner was born in Leeds county on March 14, 1870, the son of Robert and Frances (Hudson) Gardiner, and was educated at Seeleys Bay Public School and Athens High School. From Queen's University he graduated in medicine in 1891. He went into private practice at Seeleys Bay. Later he took a post-graduate course in the New York Polyclinic Hospital. He was appointed coroner of Frontenac County in 1906. He came to Kingston in 1908, and was in private practice until August 7, 1914, when he signed up for overseas service, and went on military hospital duty in Kingston. He took over the A.D.M.S. appointment from Lieut-Col. H. R. Duff in April, 1915, which position he held until May, 1920, when he retired to resume his practice. In 1916 he was named medical officer of the Royal Military College, which position he held till his death. He was made a Fellow of the American College of Surgeons in 1922.

Dr. Gardiner was a Conservative and was vice-president of the Kingston Liberal-Conservative Association in 1915 and 1916. In 1914 he was elected alderman and served on the city council for three years. The military career of the deceased dates back to 1889, when he was a sergeant in the 14th Regiment. He became captain in the Army Medical Corps in 1910, and the following year was appointed assistant medical officer of the 14th P.W.O.R. He was gazetted major in 1915 and lieutenant-colonel in 1916.

In 1896 Lt.-Col. Gardiner married Julia Poole Tett, daughter of John Poole Tett, M.P.P., and is survived by his widow, two daughters, Mrs. Howard Polger, Jr., and Miss Helen Gardiner; and two sons, Arthur and Jack. He was prominent in local fraternal circles. He was district deputy of the 14th Masonic District, A.F. and A.M., in 1913, was a member of the Ancient St. John's Lodge, Ancient Frontenac and Cataraqui Chapter, and Hugh DePayens Preceptory, Knights Templar. He was also a member of the Oddfellows Lodge, I.O.F., and the Canadian Order of Chosen Friends.

Dr. Raymond Wallace Anderson, of New Hamburg, Ont., died on September 30, 1933, aged 51 years. He is survived by his widow, formerly Miss Jessie Brown. He was a graduate of the University of Toronto (1904).

Dr. William Henry Howitt, a homœopathic physician, died at his home in Toronto on October 20, 1933, in his eighty-ninth year. He was a graduate of McGill University (1870), and is survived by his widow, formerly Amy Georgiana Perkins.

Dr. Harry W. Keith, of Enderby, B.C., died on October 22, 1933. The late Dr. Keith, who was sixty years of age, was born in New Brunswick. He graduated at McGill in 1896, and had practised in British Columbia since 1901. He was a well-known figure in the Okanagan, where he had an extensive practice. Dr. R. H. Keith, of New York, is a brother.

Dr. Albert Levesque, of Montreal, died suddenly on October 27, 1933, just six weeks after his appointment as medical officer of St. Vincent de Paul Penitentiary. He had attended to his duties earlier in the day and was fatally stricken after luncheon. He was in his 41st year. He formerly resided at St. Alexis, Que.

Dr. Levesque followed his medical course at the University of Montreal (M.D. 1916). He was attached for a time to the Hôpital de la Providence and later went to Oakland, California, where he continued the practice of his profession, afterwards becoming identified with a hospital in San Francisco. He went overseas with a medical corps in 1916 and after demobilization went to live at Ormstown.

Surviving are his widow, formerly Elmina Veilleux, and five children. His parents, Mr. and Mrs. Jules Levesque, reside in Montreal.

Dr. Ernest Levesque, of Sudbury, Ont., died suddenly on October 27, 1933, from cerebral hæmorrhage.

Born in Sturgeon Falls in 1898, Dr. Levesque attended separate school there and graduated from Ottawa University, winning the Quebec scholarship at that institution. He took his medical course at the University of Montreal (M.D. 1923), and followed this with post-graduate courses at Paris and Budapest. As a student he played hockey with the University of Ottawa and in Paris and Switzerland.

Surviving are his widow; four brothers, Edgar, of Sudbury, Dr. George, a dentist, L. Philippe and Antonio, all of Sturgeon Falls, and one sister, Mrs. E. Simard, of Ville Marie, Que.

Dr. H. H. Préfontaine, of South Durham, Que., died on October 12th at the age of 68. He had been ill for some time and finally expired from a cardiac seizure. He was born at Durham, and had always practised in South Durham, where he was well known and held in high general esteem. Dr. Préfontaine received his degree in medicine from Laval University, Montreal, in 1890.

Dr. Joseph Armour Wade, of Fredericton, N.B., who was the first medical officer for the western health district of the province of New Brunswick, when the present Health Act came into force, died at his residence on October 21, 1933, after four years of failing health.

Born in Fredericton in 1849, he received his schooling there, and attended the University of New Brunswick, graduating with the degree of bachelor of arts. He received his medical degree from Bowdoin College, Brunswick, Me. (1877), and spent most of his life as a medical practitioner at St. Andrews, where he was a coroner, chairman of the Board of Health and a member of the Knights of Pythias.

He removed to Fredericton about 13 years ago to assume the position of western district medical health officer. When he retired in 1925, because of ill-health, this position was taken over by Dr. O. E. Morehouse, Keswick.

Dr. Wade is survived by one son, J. Harrison Wade, and several nieces. Mrs. Wade died a year ago.

Dr. Ninian Wildridge Woods, of Bayfield, Ont., died on October 31, 1933. He was born in 1860 and was a Licentiate of the Royal College of Physicians of Ireland (1887), M.R.C.P.L. (1887); M.R.C.S. (Eng. 1887), L.M. (Rotunda, Dublin).

Dr. Woods was born in the Royal Naval Barracks, Plymouth, England, on May 12, 1860, the second son of William H. Woods, Royal Naval Surgeon, and Emily R. Knipe, of Dublin, Ireland. He received his early education at the Blue Coat School, Newcross, Eng., and studied medicine at St. Bartholomew's, London, Eng., and in Dublin, Ireland. After practising in London and other points in England, he came to Canada in 1893 and started practice. In 1901 he was married to Margaret Fisher Buchan, daughter of the late Walter Ewing Buchan and Jane Ellen Lauder, of Durham. They had two daughters, both of whom survive, Lucy R. and Jean M. In 1917 he was obliged to relinquish his practice owing to arthritis, at which time he was appointed postmaster, holding the position until his death. Although he was in failing health for the past two years, his condition was not serious until recently. Dr. Woods took an active part in municipal affairs and was reeve of the village for several years. Besides his widow and two daughters he is survived by a sister, Miss Lucy K. Woods, Greystones, County Wicklow, Ireland, and a brother, Lt.-Col. A. E. Woods, C.S.I., Alassio, Italy.

"We do not need philosophy to drive us to work. Necessity will do that. What we need philosophy for is to heighten our life in those moments when we can live to ourselves. We need philosophy to kill boredom, to destroy inertia, to dispel lethargy, to drive away weariness, to overcome a sense of futility.

"What people find to their astonishment is that it is when they drop—under some tremendous disappointment or under some spiritual shock—this eternal striving and clutching, that real happiness for the first time in their life comes flowing in upon them in a brimming flood."—John Cowper Powys.

News Items

Alberta

Organization of the various committees in preparation for the annual meeting of the Canadian Medical Association to be held in Calgary next June, was completed last August, and the services of every physician in Calgary have been utilized to make this meeting a success from every point of view. Under the able direction of Dr. J. S. McEachern, the President-elect and Chairman of the Local Central Committee, the various groups have been assiduously at work. A meeting of the main committee and each of the sub-committees is held each week. It is anticipated that the program will be of a high order and should attract many from the east and the west. The Publicity Committee is leaving no stone unturned to present the many attractions of Alberta and of Calgary to those whose intention it is to attend this meeting.

Rural municipal hospitals in the dried-out crop areas are encountering financial difficulties these times. In one instance, the Provincial Government has assumed the responsibility of operating the hospital and the officer in charge will admit no one without payment in advance; otherwise, he states that the institution will have to close its doors.

The Provincial Department of Health has been urging local Boards of Health to make provision for the immunization of the school children against smallpox and diphtheria, and to have periodic examinations of the children in order that physical defects may be remedied in good time.

The Committee on Specialists of the University of Alberta met recently in Edmonton, to change the regulations regarding those who may be granted certificates. This committee will submit its report to the University, to have it finally accepted or rejected. It has been planned that this will be the last year when men may receive certificates based on actual practice alone.

G. E. LEARMONTH

British Columbia

On October 18th a bronze medallion commemorating the late Dr. A. S. Monro, recently President of the Canadian Medical Association, was unveiled at the University of British Columbia. The late Dr. Monro bequeathed a substantial amount to the University for medical education, when such a faculty is established, and this memorial is in recognition of his action in this regard. The ceremonies were conducted by the Chancellor, Dr. Robert E. McKechnie.

The Health Officer of Vancouver, Dr. J. W. McIntosh, has drawn attention to the prevalence of tuberculosis in Vancouver. There are at present about 1500 cases, and 57 new cases were reported in September of this year, while in September, 1932, there were 48 new cases.

At the same time the Vancouver Public Health Institute for Diseases of the Chest announces a campaign for more adequate and intelligent handling of tuberculosis in the province. The proposals, which are most ambitious, include a central unit for diagnosis, separate units for advanced and early cases, cottages and a farm for arrested cases, and facilities for occupational training. Steps are being taken to interest service clubs and welfare agencies.

Attempts of the City of Vancouver to enforce collection of an annual license fee from medical men, recently led the eye, ear, nose and throat specialists of the city to protest. It was pointed out to the authorities that if payment of this is insisted upon, it will be necessary for the city to pay for specialist

attention of its indigent, large numbers of whom have, in the past, received such care gratuitously.

Recent legislation legalizes the sterilization of the mentally unfit. An advisory board has now been appointed, the personnel being Hon. Mr. Justice Robertson, Dr. J. G. McKay, and Miss Laura Holland, R.N. Subject to the consent of the parent, guardian or patient, and with the concurrence of the patient's physician and the advisory board, the operation may now be carried out.

At the recent examinations for the title of "Registered Nurse," one hundred and eighteen candidates were successful. C. H. BASTIN

Manitoba

The Clinic Group of the Cancer Relief and Research Institute held the first meeting of its second session on October 30th in the Medical College. The topic for discussion was "Carcinoma of the breast" and the speakers were: Prof. Wm. Boyd, who gave a pathological demonstration; Dr. N. J. MacLean, who discussed surgical treatment; Dr. L. J. Carter, on the x-ray treatment; and Dr. M. R. MacCharles, on the radium treatment.

The Winnipeg General Hospital now possesses a piece of apparatus designed for the application of a bomb of 600 milligrams of radium used at a distance of 6 cm. against malignant growths of the larynx, pharynx, tongue, and cervical glands. The apparatus was made in the shops of the Winnipeg General Hospital, according to the design, which is believed to be original, of Dr. P. A. Macdonald, Physicist to the Cancer Relief and Research Institute.

The annual St. Luke's Day service of the Winnipeg Medical Society was held on St. Luke's Day, October 22nd, at St. Ignatius Church. The Rev. Father E. T. O'Gara conducted the service, which was attended by a large number of the members of the society.

Dr. E. S. Moorhead, of Winnipeg, was a member of the delegation of doctors which conferred with Prime Minister R. B. Bennett on October 6th on the question of including medical services to indigents as one of the objects for the disbursement of federal funds. ROSS MITCHELL

New Brunswick

At the October meeting of the Saint John Medical Society, Dr. Mayes Case presented the chief paper of the evening, taking as his subject "Pneumonia in general practice." Dr. Case's presentation had an added value because of the speaker's long personal experience. The subsequent discussion was led by Dr. H. A. Farris.

Dr. J. F. Teed, of Dorchester, N.B., who has for many years been surgeon at the Dorchester Penitentiary, has recently retired on superannuation. He has been succeeded by Dr. Edgar Bourque, of Shediac. Dr. Bourque has an excellent war record and is a son of Dr. L. N. Bourque.

At the recent annual meeting of the American College of Surgeons, Drs. J. R. Nugent, C. L. Emerson, of Saint John, Drs. C. R. Baxter, G. A. Lyons, of Moncton, and Dr. G. N. Belyea, of Woodstock, were admitted to Fellowship.

In a judgment delivered recently in Supreme Court Chambers, Chief Justice Barry entered a verdict in favour of the plaintiff, Dr. W. W. Fleck, of Dalhousie, for $4,228.00 and costs in the case of the Doctor versus the Workmen's Compensation Board of New Brunswick. The claim was approximately for $4,500.00 for medical services rendered by the plaintiff under the Compensation Act to workmen engaged at the New Brunswick International Paper Co.'s plant at Dalhousie in 1929 and 1930. The Board had contended that payment of the various amounts alleged to be due had been refused owing to the plaintiff's failure to submit reports and statements within a reasonable time as comprehended by the Board's practice and requirements.

Dr. G. A. B. Addy, of Saint John, has been appointed Regent of the American College of Surgeons for a three years' term.

Dr. H. L. Abramson, Provincial Pathologist, who has been confined to his home by a serious illness for several weeks, has again returned to duty.

Dr. Wm. Warwick, Chief Medical Officer for New Brunswick, attended the American Public Health Association meeting at Indianapolis, and following this meeting was in attendance at the meeting of the Public Health Advisory Council at Ottawa.

Dr. Wm. J. Murphy, a graduate of Dalhousie University, and lately an interne at the Saint John General Hospital has commenced practice at West Saint John.

Dr. E. A. Petrie, radiologist at Saint Joseph's Hospital, Saint John, represented the New Brunswick radiologists at the first American Congress of Radiology held in Chicago. A. STANLEY KIRKLAND

Nova Scotia

On the suggestion of the Editorial Board of the *Bulletin* of the Nova Scotia Medical Society, the Western branch will edit the January Number of the *Bulletin*. This is in keeping with the editorial policy of the *Bulletin* that it should be representative of the Province and that as far as possible it is desirable that the societies of the different parts of the Province should occasionally edit a number.

Dr. M. A. B. Smith was tendered a banquet by the Halifax Medical Society upon the completion of fifty years as a medical practitioner. The large attendance testified to the high esteem in which he is held by members of his profession.

Dr. S. L. Walker, of Halifax, has resigned as Secretary of the Nova Scotia Medical Society, on account of ill-health. He is succeeded by Dr. H. G. Grant, Dean of the Medical School of Dalhousie University, and Director of the Public Health Clinic.

Deep regret will be felt throughout the Province at the news of the death at the age of 70 of James W. Reid, of Windsor. The late Dr. Reid was prominent in the public life of this Province, having represented Hants County in the Provincial Legislature for many years. He practised his profession for more than forty years.

Dr. James R. Robertson, a graduate of McGill University, who has been practising for the past five years at Amherst has moved to Halifax to resume his professional work. N. B. DREYER

Ontario

Dr. C. H. Best, Professor of Physiology, University of Toronto, has been invited by the Academic Council on behalf of the Senate of the University of London, to give a course of three lectures. He has also received an invitation from the General Board of Syndics of the University of Cambridge to give three post-graduate lectures in physiology at Cambridge. Dr. Best's lecture will be based on the results of researches carried out under his direction in the Department of Physiology and the School of Hygiene, University of Toronto.

The Anglican Sisters of Saint John the Divine have been actively engaged in hospital work in the City of Toronto since the Riel Rebellion of 1885. They are now planning a campaign to raise $300,000 to build a new convalescent hospital on a site which has been donated to them.

So great is the number of children awaiting the removal of tonsils that there is more than a year's waiting list at the Hospital for Sick Children, Toronto, and a list which will take at least a year at St. Michael's Hospital, Toronto.

The Honourable Dr. Robb, Minister of Health for Ontario, has announced that in a short time he expects to submit to the Trustees of the Ottawa Civic Hospital an agreement similar to that just accepted by the Hamilton General Hospital, by which the Ottawa Hospital will receive from the Provincial Government an amount of radium to be decided upon, as well as regular supplies of radon seeds.

Canadian nurses and the nursing profession lost a loyal and devoted leader and friend recently in the death of Miss Mary Agnes Snively in the Private Patients Pavilion of the Toronto General Hospital. A native of St. Catharines, Miss Snively began her training in 1882 in the Bellevue Hospital, New York, and, on graduation in 1884, became superintendent of the Toronto General Hospital on Gerrard Street East. At that time, there were but seven graduate nurses in the hospital and twenty-seven young women in training. There was little in the way of system for work or study. The new superintendent at once set about the establishment of a nurses' residence, and the organization of a systematic course of study, with the result that the Toronto General Hospital was soon recognized by the medical and nursing professions as among the best. Miss Snively was a strict disciplinarian but enjoyed the respect and admiration of a great host of nurses who, during a quarter of a century, passed under her care. After twenty-five years' active service as hospital superintendent, Miss Snively's resignation was regarded as a catastrophe. Miss Snively was instrumental in organizing the first Canadian Nurses' Association. J. H. ELLIOTT

On November 8th the staff of the Hamilton General Hospital inaugurated what was called a "Clinical Conference." For several years an annual "Clinical Day" has been held which was always addressed by some outstanding man from another centre. This year it was decided to handle the program locally, and invitations were sent out to the surrounding districts. This innovation was made with some diffidence by the members of the staff who are working in a civic hospital and have no connection at present with any university.

More than 200 physicians registered for the meeting, and half of these were from out of town, some coming from as far as Lindsay, Stratford and Niagara Falls. The morning was given over entirely to clinics. There were ward rounds, surgical operative clinics, and there were also clinics in practical methods in the outpatient division. In the afternoon interesting cases were presented by the medical and surgical staffs, and in the evening a symposium on appendicitis and its treatment was conducted, which was discussed by the visitors as well as the local doctors.

The scheme, when analyzed, was an attempt to concentrate in one day by means of clinics, etc., the methods used by the members of the General Hospital staff in diagnosis and treatment, and only methods of practical use to the general practitioner were emphasized. The meeting was unique in the history of medicine in this section of Canada, in that it was arranged by men who are not connected with any teaching institution, yet have a very happy relation with each other as members of a staff.

There is a wealth of clinical material in this hospital of 600 beds, probably more than in any other hospital in Ontario, outside of Toronto, and although it is thoroughly worked up by the local men from both clinical and laboratory sides it is the first time that a serious attempt has been made to use it for teaching purposes. F. B. BOWMAN

The Ontario Hospital Association, on October 27, 1933, elected the following officers:— *Hon. President,* F. D. Reville, Brantford; *Hon. Vice-president,* R. F. Armstrong, Kingston; *President,* Brigadier-General C. M. Nelles, Niagara-on-the-Lake; *President-elect,* Dr. D. M. Robertson, Ottawa; *First Vice-president,* Rev. Father Georges Verreau, Ottawa; *Second Vice-president,* Dr. W. J. Dobbie, Weston; *Hon. Sec.-Treasurer,* Dr. F. W. Routley, Toronto; *Secretary,* Miss Dorothy Dart.

Quebec

Sir William Osler was commemorated in an impressive manner at the celebration on November 4th, of "Medical Sunday" in St. George's Church, Montreal, where Ven. Archdeacon Gower-Rees, rector of the church, preached at the morning service on "Sir William Osler — Physician and Scholar."

Taking part in the morning service were Dr. J. C. Meakins, chairman of the department of medicine at McGill and president of the Medico-Chirurgical Society of Montreal, and Dr. W. W. Francis, librarian of the Osler Library at McGill and nephew of Sir William Osler, who read the lessons.

Touching but lightly on the biographical aspect of his subject, Archdeacon Gower-Rees adopted the psychographical method of treatment and compared the life and character of Osler with Jesus. His text was "Jesus went about doing good and healing," and so it could be said, he pointed out, that Sir William Osler went about doing good and healing.

Dr. Osler had the capacity, as Jesus had, for bringing out the best and noblest in those with whom he came in contact. His spiritual world was very real to him and he was more interested in the soul of his patient than in his physical structure.

Through his extraordinary interest and sympathy for the afflicted ,and his great personality, he was instrumental in bringing about great changes in medical practice. He was not interested in psycho-therapy, because he had no need to be; he practised it. He was a great healer because he brought life and power to the afflicted under his care. Montreal could never forget Osler's work in the General Hospital where he revolutionized the wards and brought new hope to the patients.

Osler, the Archdeacon pointed out at the conclusion of his sermon, was an outstanding example of a clergyman's son. His parents gave up a comfortable home and familiar surroundings to enter the hinterlands of Canada as missionaries. Their noble characters found a mirror in the heart of their son who reflected throughout his life their saintly thoughts and spirit of sacrificial helpfulness.

At the evening service Archdeacon Gower-Rees took as the subject of his sermon, "Medicine and Religion." Physicians whether they desire it or not, he said, are guardians of public health and morals in that they can establish the connection between clean living and clean thinking. Admitted as they are to the intimacies and sacred things of life, they have a responsibility and should act accordingly.

Saskatchewan

Dr. Anna Nicholson, of Saskatoon, addressed the Provincial Council of Women on public health, in October. She spoke of the new marriage law as an indication that the people's representatives are socially-minded, but it affects only 50 per cent of the participants in the marriage contract. Women's organizations have indicated and insisted that they do not consider being omitted a gesture of chivalry.

Great strides are being made in mental hygiene. The psychopathic treatment provided by the government in the Regina General Hospital has been in such demand that arrangements are being made for extra beds. This has made it possible for a patient to have special treatment without going to a mental institution.

The price society pays for institutions is low compared to the loss society sustains for emotionally unstable individuals who are not in institutions but who cannot carry economic burdens satisfactorily. Society is becoming permeated more and more with unstable people who fail to make the best of life and do their share of the world's work. People are trying to escape their responsibilities and push them on to organizations and societies. This attitude seems to be increasing. The lessening of personal obligations is an indication that more than the treasury is being depleted.

The cancer clinics are running in a very orderly way and have treated approximately one thousand cases in the year. The main trouble is that, in spite of propaganda, cases still come too late.

Public health and social workers coming in close contact with community life realize that the combination of large families together with poverty is a tremendous factor in the destruction of physical and mental health. Women's organizations are becoming increasingly interested in birth-control for this reason. "Birth-control" is a term that should be discontinued, as the public often think it includes abortion. Birth-control presumes only the right to teach harmless methods of preventing conception and has nothing to do with the destruction of life. The League of Nations has included the subject of abortion and birth-control as one of its problems of health.

The Alberta Provincial Council of Women passed a resolution last year favouring the establishment of a birth-control clinic in the province, and dissemination of knowledge about family limitation. In Canada there are four birth-control clinics—at Halifax, Kitchener, Hamilton, and Vancouver.

In Saskatchewan a school of physical education has been begun under the direction of Miss Ethel Mary Cartwright, Professor of Physical Education, University of Saskatchewan. Miss Cartwright founded the McGill School of Physical Education and has made an important contribution to the development of health education and women's sports in Canada. Previous to the establishment of this school there were only two such schools in Canada, the Margaret Eaton in Toronto and the McGill School of Physical Education in Montreal.

At the annual meeting of the staff of the Regina General Hospital the following officers were elected: *President,* Dr. U. J. Gareau; *Vice-president,* Dr. E. B. Alport; *Secretary,* Dr. Max Israels. Additional members on the executive are Drs. W. A. Dakin and J. Brown. The advisory committee to the Board of Governors are Drs. W. A. Harvie, H. E. George, and E. O. Rothwell.

The Anti-Tuberculosis League helped 6,836 persons in 1932 with the money obtained from the sale of Christmas seals. Twelve babies born of tuberculous mothers were cared for in the Preventorium, in conjunction with the I.O.D.E. At the three sanatoria 2,092 persons were examined. The travelling consultants examined 1,646 persons. In addition 720 Normal School students and 194 school children attending schools adjacent to the Sanatorium were examined. Family physicians examined 803 contacts.

Dr. G. J. Wherrett, of the Saskatchewan Anti-Tuberculosis League medical staff, has been appointed executive secretary of the Canadian Tuberculosis Association. Succeeding Dr. R. E. Wodehouse, Ottawa, recently named Deputy Minister of National Health, Dr. Wherrett takes over his new duties in November. He is a graduate of the University of Manitoba, and first joined the Anti-Tuberculosis League staff in 1924. In 1925 he was appointed travelling diagnostician for New Brunswick and two years later director of the Maritime Tuberculosis Educational Committee. In 1928 he was one of the thirty tuberculosis specialists chosen for the European Tuberculosis Scholarships, and while in England, following a tour of European sanatoria, was made a member of the Royal College of Physicians. He has been associated with the Saskatchewan League since he returned from England.

A Refresher Course was held during the period July 25th to 29th of this year, at the Saskatoon City Hospital. It was felt that due to economic stress a local Refresher Course would be of value to rural practitioners in Saskatchewan who were reluctant to go further afield on account of the times. The wisdom of such proposal was proved by the fact that over 100 attended the Course and, without exception, voted it a success, asking for its establishment as an annual event. The attendance throughout the whole week was excellent, despite extremely hot weather.

The program was of high order and was conducted by the Medical Staff of the Saskatoon City Hospital, assisted by members of the University of Saskatchewan and the Sanatorium. LILLIAN A. CHASE

United States

The Alvarenga Prize of the College of Physicians of Philadelphia.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about three hundred dollars, will be made on July 14, 1934, provided that an essay deemed by the Committee of Award to be worthy of the Prize shall have been offered.

An essay intended for competition may be upon any subject in medicine, but must be accompanied by a written assurance from the author that it has not appeared previously in print, either in whole or in part, in any form, and has not been presented elsewhere in competition for a prize. The essay should represent an addition to the knowledge and understanding of the subject based either upon original or literary research. It must be typewritten, and in English acceptable for publication without necessity for editing by the Committee. Any illustrations should be appropriate and correctly annotated with the text. Essays must be received by the Secretary of the College on or before May 1, 1934.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; and that it may be published by the author with the consent of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1933 has been awarded to Drs. Harry Shay and J. Gershon Cohen, of Philadelphia for their essay entitled: "Experimental Studies in Gastric Physiology in Man." John H. Girvin, Secretary, 19 South 22d Street, Philadelphia, Pa., U.S.A.

The American Association for the Study of Goitre.—The American Association for the Study of Goitre, for the fifth time offers $300.00 as a first award, and two honourable mentions, for the best essays based upon original research work on any phase of goitre presented at their annual meeting in Cleveland, Ohio, June 7th, 8th, and 9th, 1934. It is hoped this will stimulate valuable research work, especially in regard to the basic cause of goitre. Competing manuscripts must be in English, and submitted to the Corresponding Secretary, J. R. Yung, M.D., 670 Cherry St., Terre-Haute, Ind., U.S.A., not later than April 1, 1934. Manuscripts received after this date will be held for the next year or returned at the author's request.

The first award of the Memphis, Tenn., 1933, meeting was given Anne B. Heyman, A.B., M.S., University of Michigan, "The Bacteriology of Goitre and The Production of Thyroid Hyperplasia in Rabbits on a Special Diet." Honourable Mentions were awarded J. Lerman, M.D., and W. T. Salter, M.D., Huntington Memorial Hospital, Boston, Mass., "The Calorigenic Action of Thyroid and Some of its Active Constituents"; Prof. Dr. Stefan Konsuloff, Sofia, Bulgaria, "Experimental Studies on Etiology of Goitre".

The United States Now Has Complete Death Records.—Deaths are now recorded for the first time in the whole United States. With the admission of the State of Texas to the United States death registration area, just announced by Secretary of Commerce Roper, the Census Bureau is able for the first time to compute reliably the death rate for the entire nation. The cause of every death in the United States will now be a matter of record, as will also the age, sex, occupation and nativity of the dead person.

When the Census Bureau first began to gather vital statistics for the nation, in 1902, only ten states and the District of Columbia were included in the death registration area. Gradually other states have been added. But six states have been admitted only during the past six years. Texas is still not included in the area of registration of births. It is hoped that this will be attained during the coming month, however, thus making Uncle Sam's vital statistics 100 per cent complete so far as area is concerned.

General

Collection Agencies.—We are indebted to Mr. Charles W. Buchanan, Manager of the Medical Audit Association, Toronto, for the following information which is of importance and will no doubt, interest our readers.

At different times warnings have appeared in the *Canadian Medical Association Journal* against fake collection agencies. These warnings were very timely, and well justified.

For years the Attorney-General of Ontario has been urged to enact legislation to protect the public against these fakirs, and it will be of interest to the profession to know that such an Act has now been brought into being. "The Collection Agencies Act, 1933", of the Province of Ontario, is in operation, and is an excellent Act. Each collection agency operating in this province must now secure a licence from the Ontario Securities Commission, must furnish bond if requested, and the licence can be cancelled if cause therefor is given. More than that, wide powers have been given to the Registrar, Mr. Norman Harris, which enable him to eliminate undesirable practices. Each agency must submit to Mr. Harris copies of all its forms, and unless he approves of them the forms cannot be used. There were many abuses to be corrected. Each agency must now report to its clients once a month, and all funds accruing to clients must be placed in a Trust Account. One feature which we always disapproved of was the "docket fee" charged by many agencies; when they received a list of accounts they at once entered a docket fee of so much a name, whether the account was afterwards collected or not. We understand Mr. Harris disapproves, also, of this docket fee.

Dr. F. W. Routley, of Toronto, was re-elected President of the Canadian Hospital Council, on Sept. 9th, at the concluding session of its biennial meeting held in Winnipeg.

Other officers elected are: *Honorary President*, Right Hon. R. B. Bennett; *Honorary Vice-president*, Hon. Murray MacLaren, C.M.S., P.C.; *First Vice-president*, W. R. Chenoweth, Montreal; *Second Vice-president*, Rev. Mother Allaire, Montreal; *Secretary-Treasurer*, Dr. S. Harvey Agnew, Toronto; *Executive Board*, Leonard Shaw, Saskatoon; J. H. Coady, Vancouver; Representative of the International Committee on Accounting, Rev. Father Vereault, Ottawa.

Book Reviews

The Cyclopædia of Medicine. George Morris Piersol, B.S., M.D., Editor-in-Chief. Twelve volumes; amply illustrated. Price $120.00. F. A. Davis Co., Phila., 1933.

This is a work of outstanding importance. It inevitably recalls that monumental Analytic Cyclopædia of Practical Medicine, founded and edited by the late Dr. Charles E. deM. Sajous, which was so helpful to the medical men of a generation ago. Indeed, the editors of the new Cyclopædia of Medicine freely acknowledge their debt to their distinguished predecessor, and we are pleased to see that some of his more important articles have been reproduced, a tribute to their value and prevision. The name Sajous still graces the pages of a cyclopædia of medicine. Some seven hundred well-known authorities have contributed and the list of names is cosmopolitan, for the authors hail from Canada, Great Britain, Continental Europe, and from Central and South America, in addition to the United States, which country bulks the most largely, as one would expect.

The work under review is conceived along broad lines, is remarkably comprehensive, and thoroughly up to date. It is difficult to realize what an amount of industry and critical acumen has been brought to bear upon its production. The result is eminently satisfactory. The editors have set themselves to create a unique medical work of reference, which should embody the latest and most authoritative views on all of the more important aspects of medicine, surgery, and the specialties, a work in which recent scientific advances should be so correlated with the practical side of medicine as to make it of equal value to the investigator and the practitioner. In this they have succeeded. Nowadays, with the insistence on the importance of the basal medical sciences and the recognition of the value of research, the young medical man is prepared as never before to perform well his life task, and is as appreciative of the problems of Medicine as are his teachers. In fact, the gulf that once yawned between the general practitioner and the clinical and laboratory teacher can hardly be said to

exist. Therefore, it has been possible to produce a cyclopædia which can appeal to all.

In his preface the Editor-in-Chief outlines the principles on which the Cyclopædia is based. He says,—"Accurate diagnosis and intelligent management of disease to-day depend upon a thorough understanding of the underlying alterations in physiology. In short, in addition to an adequate clinical technique, the modern approach to medical problems is tending more and more in the direction of pathological physiology, physical chemistry, and biophysics. Proceeding along these lines, an effort has been made to stress the variations from normal function that are brought about by various pathological processes." These principles are consistently adhered to.

In addition to the systematic consideration of the various disease processes, in some cases amounting to treatises, and in all instances adequate, attention has been given to symptoms and signs, their elucidation, and their significance. Treatment, medical and surgical, receives much attention. Drugs, their characters, indications and contraindications, with, often, suitable prescriptions, are dealt with helpfully. Certain subjects that are much in the limelight at the present time are considered at some length. Such are the surgery of the central and autonomic nervous systems; the surgery of the adrenals; the surgery of tuberculosis; the various aspects of physical and organo-therapy. Other timely subjects, like workmen's compensation, industrial medicine, legal medicine, and social service are adequately discussed. In fact, it would be hard to name a topic which has been overlooked.

The main articles are treated in a complete and systematic way. Here and there are interspersed (in smaller type) abstracts of recent literature bearing on the topic under review, the purpose of which is to emphasize or illustrate important points. The difference in type enables the busy man to pick out at once what is useful for him at the moment, thus getting information which he can later supplement at his leisure. References to the literature are given at the end of most of the contributions. Confessedly, they are not complete, but they are sufficiently ample and will prove a guide to other articles if it be desired to consult other authorities. No fault can be found with this; no other course was practicable. In some cases the editors have been generous. We notice, for example, that 454 references are given at the end of Kamm's exhaustive article on Animal Extracts. This should satisfy anybody.

The subjects dealt with are arranged alphabetically, of course, but reference is facilitated by an excellent analytical index prefixed to each volume. It is planned to keep the work up to date by issuing supplementary volumes from time to time.

It is impossible to do justice to this cyclopædia in one short review. It must be seen and studied to be appreciated. At first sight, the price may seem somewhat staggering, but is not excessive when one realizes what one is getting. We have in these volumes in readily accessible form the marrow of medical knowledge and practice, an epitome of many medical libraries. The work should have a special appeal to those who do not have ready access to the advantages of the large medical centres, but even those who work in universities and hospitals will appreciate the saving of time that is brought about by having a complete and authoritative exposition of the art and science of medicine in a convenient form and properly indexed. We commend The Cyclopædia of Medicine without hesitation.

Anatomy of the Brain and Spinal Cord. William W. Looney, A.B., M.D., Professor of Anatomy, Baylor University College of Medicine, Dallas, Texas. Second edition revised. 370 pages, illustrated. Price $4.50. F. A. Davis Co., Philadelphia, 1932.

For some years the work in anatomy in the second year of the medical course has centred largely upon the study of the central nervous system. Consequent upon this there has been a demand for texts devoted to this subject. The larger text books on anatomy, *e.g.*, Gray, Cunningham, etc., have excellent sections devoted to the nervous system but there are many reasons why smaller but adequate books are attractive and useful. Several such are available and are in use, and the book under review is an addition to the list. The factual basis of these books varies little, perforce. Differences must appear in the manner of presentation, illustration, and the efforts made to correlate the subject with other subjects in the curriculum, especially physiology and medicine. It is then on these points that judgment of any one text must very largely be found.

One would judge that the present volume was based, in the first instance, upon notes prepared for student classes, and this receives some confirmation from the statement that the first edition was published by the press of the university to which the author is attached as Professor of Anatomy. This edition has been prepared with a view to wider use. It bears the marks of preparation by one actively engaged in teaching and this is a point in its favour. The material is well arranged and presented in concise, relatively simple fashion. Illustrations in a book of this character are exceedingly important and those presented are on the whole very good. Most of them are diagrams and set forth the point desired with commendable clarity. None, however, are in colour or part colour. Correlation with other subjects receives adequate attention, both throughout the main text and in the form of a final chapter devoted to the presentation of clinical cases, selected to illustrate the possibilities of anatomical localization of the symptoms and signs of some of the commoner neurological conditions. Whilst the book has no outstanding points that differentiate it from the other texts now in use, it is worthy of a place among the anatomical works recommended for students and such practitioners as are interested in the subject.

Surgical Anatomy. C. Latimer Callander, A.B., M.D., F.A.C.S., Assistant Clinical Professor of Surgery and Topographic Anatomy, University of California Medical School. 1,115 pages, illustrated. Price $14.50. W. B. Saunders, London and Philadelphia; McAinsh & Co., Toronto, 1933.

The broad underlying principle of this splendid volume is to indicate the paths of surgical approach to the pathological process which is to be removed or corrected. This the author has fully succeeded in accomplishing, as this work has the stamp of unusual merit and fully warrants the words of Dean Lewis in his foreword, "The book's appearance should be eminently satisfying." It is without doubt the most thoroughly comprehensive volume on surgical anatomy which it has been our good fortune to read. The descriptive anatomy of every organ and part of the human body is unusually well portrayed. Of much value are the surgical references to regional anatomy to which a large amount of space is devoted. The illustrations are numerous and excellent. The volume will be of much practical assistance to the surgeon.

The History and Epidemiology of Syphilis. Wm. Allan Pusey, A.M., M.D., LL.D., Professor of Dermatology Emeritus, University of Illinois. The Gehrmann Lectures, University of Illinois, 1933. 113 pages, illustrated. Price $2.00. Charles C. Thomas, Springfield, Ill., and Baltimore, Md., 1933.

For four centuries after its first overwhelming outbreak in the closing years of the fifteenth century the real history of the origin of syphilis lay buried in Spanish archives. Largely through the studies of Dr. Montejo, a Spanish army surgeon, authentic evidence of the American origin of the disease was first published in 1882. Surprisingly, not much attention was paid to his work, till Iwan Bloch drew attention to these illuminating researches in his monumental work, "Der Ursprung der Syphilis," published at Jena, 1901.

Dr. Pusey has performed a meritorious task in condensing the dramatic story in two of these three memorial lectures, recently delivered and now published in an attractive volume of 113 pages. The story of the transport of the "Great Pox" by the sailors of Columbus to Spain, of its rapid dissemination throughout Europe, of the illustrious physicians who have studied and written of it, of their clinical investigations, and of their efforts to find a cause and a cure, which culminated in the great discoveries in our own times by Schaudinn and Hoffman, Noguchi, Wassermann and Ehrlich, all this is charmingly told by the author. There are many illustrations, of old engravings, of the title pages of outstanding books, and of photographs of the masters of medicine who have played a rôle in this story, all excellently reproduced. To the reviewer, the chief interest of the volume lies in its historical character. None the less, the final chapter on the epidemiology of the disease will repay the reader equally for its perusal.

Therapeutic Uses of Infra-Red Rays. W. Annandale Troup, M.C., M.B., Ch.B. Hon. Consulting Electrotherapist to Portman Hospital, Blandford. Second edition, 92 pages, price 6/6 net. Actinic Press, London, 1933.

Sir William Willcox in the Foreword of the second edition of this work, which has just appeared, writes: "Dr. Troup is to be very heartily congratulated on the production of a very helpful and valuable guide in the use of one of the most important remedial agents . . . It is to be hoped that his book will obtain the widest possible circulation among the profession." If for no other reason, from such an illustrious source, this statement in relation to Dr. Troup's work at once provides the reader with a definite incentive to read this work in its entirety.

As in the first edition, Dr. Troup presents his arguments for increasing professional recognition of infra-red therapy in a very clear, interesting and most emphatic manner. In this second edition, one finds the work has been considerably revised and greatly enlarged. Many new and original plates appear and "case notes" are much more elaborate than those seen in the earlier work. Here, within the compass of a very small manual, one finds a very entertaining and a remarkably complete story in relation to infra-red therapy, and its mission of relieving pain, eliminating or shortening disability periods. To the uninitiated, the remarkably large range of cases successfully treated will come somewhat in the nature of a surprise. The profession generally will be well repaid in studying this work.

Digestive Tract. Alfred E. Barclay, O.B.E., M.A., M.D., D.M.R.E., Lecturer in Medical Radiology, University of Cambridge. 395 pages, illustrated. Price $10.75. University Press, Cambridge. Macmillan Co., Toronto, 1933.

The developments of x-ray technique have necessarily left the practitioner behind in many respects, and it is therefore valuable to have a work which discusses radiological studies from the more general points of view of physiology, anatomy and pathology.

Dr. Barclay points out that radiology is not a new branch of medicine, but is a new outlook on medical problems, and the radiologist must have a sound knowledge of anatomy and clinical medicine. Then he should also be a clinician. In other words, the radiologist should not be a technician, but a medical man with the technician's knowledge. This is not easy for the radiologist. The work does call for such technical knowledge and for such an amount of time in routine work that it is necessarily impossible to be a clinician at the same time. The best that can be hoped for is that he should take up radiology only after a sound and prolonged experience in clinical work and that he should constantly refresh his mind by keeping in touch with it. How impossible it is to expect one mind to attain this ideal is hinted at in this book, concerned, as it is, with only a segment of the body, important though that be. But Dr. Barclay has included the fruit of a long experience in x-ray work, and for the practitioner who has an x-ray apparatus, as well as for those who have x-ray work done for them, his book will be found to be a valuable and interesting guide.

Oral Spirochetes and Related Organisms in Fuso-Spirochetal Disease. David T. Smith, A.B., M.D., Associate Professor of Medicine, Duke University School of Medicine, Durham, N.C. 243 pages, illustrated. Price $4.50. William & Wilkins, Baltimore, 1932.

This very interesting volume, by one of long experience in the subject, brings together the author's personal experimental experiences and a very excellent review of what is known at present concerning fuso-spirochætal infection in relation to man. The volume is well turned out, with few errors; contains—with only a few exceptions—opinions which can be concurred in, and includes a valuable bibliography on the subject. It will be of value to physicians as the first and only book dealing exclusively with the etiology, diagnosis, treatment and the control and cure of fuso-spirochætal disease.

Arteriosclerosis. Survey of the Problem. Publication of the Josiah Macy, Jr. Foundation. Edited by Edmund V. Cowdry, Washington University, St. Louis. 617 pages. Price $6.00. Macmillan Co., New York and Toronto, 1933.

Whilst this is a collection of papers by various authorities they have been arranged to give the balance and continuity of a book by a single author. It is an exceedingly useful summary of modern views on an important subject, but it may come as a shock to some to learn "statistics of arteriosclerosis are unsatisfactory to such a degree as to warrant very limited conclusions as to the prevalence of the condition."

Mayo Foundation Lectures on the History of Medicine. 516 pages, illustrated. Price $5.75. Saunders, Phila. and Lond.; McAinsh & Co., Toronto, 1933.

This book contains a series of lectures delivered at the Mayo Foundation, and at the Universities of Iowa, Minnesota, and Wisconsin, the North-western University, and the Des Moines Academy of Medicine at various times from 1926 to 1932. The series here presented does not contain all the lectures that were delivered, for eleven were either published elsewhere or were not prepared for publication. No attempt is made to cover the entire field of medicine, nor to present the topics in any logical sequence. Men of learning were invited to deliver their lectures at their own convenience, on topics of their own selection. Therefore, one may take up the book at any chapter and find enlightenment and pleasure. The names of Fielding H. Garrison, Francis R. Packard, Henry Sewall, and Aldred S. Warthin may perhaps be mentioned, without making any invidious distinction, where all the contributors are men of note, as a guarantee of the quality of the offering. Individual "Makers of Medicine" are dealt with, such as Billings, Ambroise Paré, John Hunter, and Rudolf Virchow; the relationship of medicine to science, art, and civilization; Renaissance midwifery; the medical corps of the army and scientific medicine; and some lighter topics, such as "Joyfull Newes out of the New-Found Worlde," "The Physician of the Dance of Death," and "Resurrection Days." Incidently, we are pleased to see that Doctor Ball in his "Resurrection Days," gives Prof. John Wilson, alias "Christopher North," his deserts in regard to his scandalous treatment of Doctor Knox. Naturally the style of the different authors varies considerably, but all the lectures are

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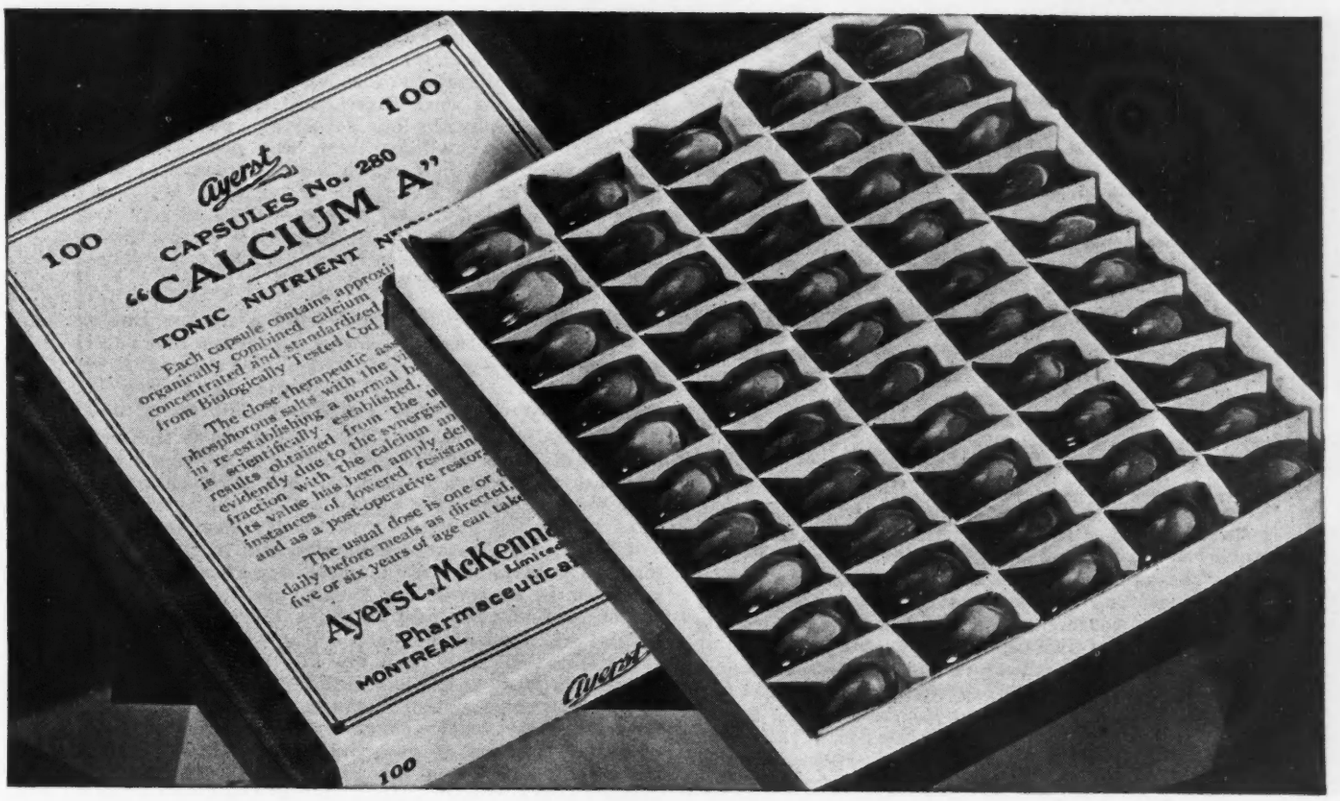

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scholarly, informative, and interesting. The volume will well repay perusal by the busy man, and indeed by all who wish to give a spare half hour to the pursuit of Clio. The very considerable number of books that have been appearing of late is a happy evidence of the increasing interest that is being taken in that most entrancing of subjects—the history of medicine and of medical men.

The Early History of the Infant Welfare Movement. G. F. McCleary, M.D., D.P.H. Formerly a Deputy Senior Medical Officer, Ministry of Health, etc. 176 pages, with 6 portraits. Price 6s. H. K. Lewis, London, 1933.

This volume gives an account of the beginnings and early developments of infant welfare during the closing years of the past century and the early years of this century. The author was actively engaged in the work at that time, and so speaks from personal knowledge not only of the work but of the workers who were his fellow-pioneers, the portraits of some of whom are included. In 1899, the infant mortality rate for England and Wales was 163; in 1931, it was 66, "one of the most remarkable instances of man's power to prevent disease and premature death." The infant welfare movement was part of the general movement for child protection which was developing at the time. It was in France that the well-baby clinic was first developed, and from France, it spread to other countries. In 1893, Nathan Straus established the first milk depot for infants in New York City. The author recounts the happenings of the first international congress of "Les Gouttes de Lait" and of the national conferences of 1906 and 1908 on infantile mortality in Great Britain. These accounts are full of interest, and readers will appreciate the appendix which gives the Presidential Address delivered at the first national conference by the Right Honourable John Burns, M.P. The book is heartily recommended to all those who have an interest in the historical aspects of medicine. It will be of particular interest to pædiatrists and public health workers.

Frontiers of Medicine. Morris Fishbein, M.D., Editor, Journal American Medical Association, and Hygeia the Health Magazine. X and 207 pages. Price $1.00. Williams & Wilkins, Baltimore, 1933.

This little book forms one of the "Century of Progress Series," published in connection with the Exposition at Chicago and designed to place the intellectual message of that Exposition in a clear and simple way before the public. So far as "Frontiers of Medicine" is concerned the term "Century of Progress" rather underestimates the case, for Doctor Fishbein begins his story with what we believe to have been the situation in pre-historic times. Instead of one hundred years, his book covers the development of medical art and science during two and a half millenia. Yet, he could not have done otherwise and place advance in medicine, so extraordinary in recent times, in its proper perspective. Doctor Fishbein, in a clear and simple presentment of his subject, touches on the "high spots" of medical history. He deals with the dawn of medical practice, the pre-Hippocratic days, the age of Hippocrates and Galen, the dead hand of tradition in the Middle Ages, the Lutheran revolt of Paracelsus, and the birth of scientific medicine with the work of Vesalius and Harvey. This leads up to the modern period and he covers adequately for his purpose, if briefly, prevention of disease, the germ theory, the discovery of anæsthesia, asepsis in obstetrics, the rise of nursing as a profession, specialization in medicine, and also sets before his readers many of the problems that arise in medicine and surgery, emphasizing the wonderful perfection that has been reached in diagnosis and treatment. In speaking of neurosurgery Doctor Fishbein makes this statement, "Several surgeons have now removed one-half of the cerebrum of patients and there is evidence that one female patient continued to think as well as any woman." We had not before suspected him of being a misogynist, but, in any case, we may ask—is an apology impending? Joking apart, however, we think that the learned and versatile author has placed before the general public, for whom, clearly, his book is written, the salient facts about our profession and medical practice in an effective way. Such instruction is much needed, and we hope that his book may have some part in dispelling the misconceptions and prejudices about our work that are so widespread among the laity. "Frontiers of Medicine" will be of use not only to the intelligent man who desires accurate knowledge of a subject which has a perennial interest for the man in the street and is becoming every day more popularized, but also to the medical student and practitioner who wants a bird's eye view of the history and trends of his profession before turning to the larger and more pretentious works.

The Heroic Age of Science. William Arthur Heidel, Research Professor of Greek Language and Literature in Wesleyan University. 203 pages. Price $2.50. Published for Carnegie Institution of Washington by Williams & Wilkins, Baltimore, 1933.

This publication, No. 442, is fully up to the well-known standards of the great institution from which it comes and will be welcomed, not so much by the work-a-day practitioner of the art of medicine in the mass as by the growing number of those interested in the history of science generally, and in the various research departments of the university of modern days, not least in those of the Faculty of Medicine. The author is evidently, first of all, a thoroughly trained student of classical, and especially Greek, philosophy and its history, and probably all the better trained for such a task as he has undertaken, because he is not a trained physician or a man of science in the technical sense. The whole volume is redolent of the Greek atmosphere or point of view, and should be in the library of every reader along side of Frazer's "The Golden Bough." The latter is, as all its readers know, a sort of loose quarry of isolated facts and beliefs and data gleaned from the nature of primitive man all over the world. Professor Heidel's equally interesting and authoritative discussion of a field more limited as to area, but devoted to the philosophy and methods of the truly scientific group of early observers and thinkers produced by that little country in an age still thought to be remote, should be most helpful and illuminating to any worker in the field of modern science. The publishers have lived fully up to their usual high standard of excellence in the making of this volume.

National Health Insurance. G. F. McCleary, M.D., D.P.H., formerly Principal Medical Officer, National Health Insurance Commission (England). 185 pages. Price 6s. H. K. Lewis, London, 1932.

This book is based upon the De Lamar Lectures which the author delivered at Johns Hopkins University. It is recommended to anyone who desires a readable, fair and concise presentation of the subject by one who has been intimately associated with health insurance in England. Doctor McCleary believes that "the medical treatment provisions of the insurance scheme will develop, not as part of the scheme, but as part of a great unified system of national health service."

Teaching Methods in Medicine. Wm. Duncan Reid, A.B., M.D., F.A.C.P., Assistant Prof. of Cardiology, Boston University School of Medicine. 111 pages. Price $1.00. Copies may be obtained from the author, 510 Commonwealth Ave., Boston, 1933.

This little volume is worthy of careful study by every junior teacher in medicine—indeed by senior ones as well, if it is not already too late in their careers to improve. Medical education suffers, as someone has very truly said, from a plethora of "authorities on medicine and a dearth of teachers."

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Colds and Hay Fever. Frank Coke, F.R.C.S. 148 pages. Price $1.50. Baillière, Tindall & Cox, London; Macmillan Co., Toronto, 1933.

A "minor monograph" which contains many very useful hints in the treatment of colds and allergic conditions.

Wheat, Egg or Milk Free Diets. Ray M. Balyeat, M.A., M.D., F.A.C.P., Associate Professor of Medicine, University of Oklahoma Medical School, *et al.* 149 pages. Price $3.00. J. B. Lippincott, Philadelphia, London and Montreal, 1933.

An extremely useful compilation of diets for those whose idiosyncrasies forbid their eating such staple foods as egg, or milk, or wheat.

Medical State Board Examinations. Harold Rypins, A.B., M.D., Secretary, N. Y. State Board of Medical Examiners. 448 pages. Price $5.50. J. B. Lippincott Co., Philadelphia, London and Montreal, 1933.

A very useful collection of points regarding medical state board examinations, together with sample questions.

BOOKS RECEIVED

Treatment of Rheumatoid Arthritis and Sciatica. A. H. Douthwaite, M.D., F.R.C.P., Assistant Physician, Guy's Hospital. Second edition, 131 pages. Price 6s. H. K. Lewis, London, 1933.

Outline of Medicine for Nurses. James Fanning, M.D., D.P.H., Medical Officer of Health, Maldens and Coombe Urban District. 143 pages. Price 75c. John Wright & Sons, Bristol; Macmillan Co., Toronto, 1933.

Laboratory Manual of Neuro-Anatomy. C. L. Davis, M.D., Professor of Anatomy and H. S. Rubinstein, B.S., M.D., Instructor in Neuro-Anatomy, University of Maryland. Part II. Stereographic Plates. Price $3.00. William Wood, Baltimore, 1933.

Une Etude de Chimiothérapie de la Tuberculose. S. Ansbacher. 88 pages. Imprimerie Kundig, Geneva, 1933.

Surgery of the Stomach and Duodenum. J. S. Horsley, M.D., F.A.C.S., LL.D., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. 260 pages, illustrated. Price $8.50. C. V. Mosby Co., St. Louis; McAinsh & Co., Toronto, 1933.

Acidosis and Alkalosis. Stanley Graham, M.D., F.R.F.P.S., Leonard Gow Lecturer on Medical Diseases of Infancy, University of Glasgow, and Noah Morris, M.D., B.Sc., D.P.H., F.R.F.P.S., Lecturer in Biochemistry, University of Glasgow. 203 pages, illustrated. Price $2.25. E. & S. Livingstone, Edinburgh; Macmillan, Toronto, 1933.

Enlarged Prostate and Prostatic Obstruction. Kenneth M. Walker, R.R.C.S., M.A., M.B., B.C., Jacksonian Prizeman and Hunterian Professor, Royal College of Surgeons, 1911, 1922, 1924, 1933. Second ed., 223 pages, illustrated. Price $4.25. Oxford University Press, London; McAinsh & Co., Toronto, 1933.

Clinical Disorders of the Heart Beat. Sir Thomas Lewis, C.B.E., F.R.S., M.D., D.Sc., LL.D., F.R.C.P., Physician in Charge of Dept. of Clinical Research, University College Hospital, London. Seventh ed., 127 pages, illustrated. Price 6/6d. net. Shaw & Sons, London, 1933.

Adrenal Cortex. L. R. Broster, O.B.E., M.A., D.M., M.Ch., F.R.C.S., Surgeon to Charing Cross Hospital, and H. W. C. Vines, M.A., M.D., Pathologist, Charing Cross Hospital Institute of Pathology. 94 pages. Price 6s. net. H. K. Lewis, London, 1933.

Cutaneous Neoplasms. Norman Paul, M.B., Ch.M., Physician for Diseases of the Skin, Sydney Hospital. 153 pages, illustrated. Price 10/6d. H. K. Lewis, London, 1933.

Clinical Examination of the Nervous System. G. H. Monrad-Krohn, M.D., F.R.C.P., Professor of Medicine, Royal Frederick University, Oslo. Sixth ed., 234 pages, illustrated. Price 7/6 net. H. K. Lewis, London, 1933.

Maternal Mortality and Morbidity. J. M. Munro Kerr, M.D., F.R.F.P.S., F.C.O.G., Regius Professor of Midwifery, Glasgow University. 382 pages, illustrated. Price $7.50. E. & S. Livingstone, Edinburgh; Macmillan Co., Toronto, 1933.

Mental Diseases. Catechism series. Second ed., 80 pages. Price 1/6 net. E. & S. Livingstone, Edinburgh, 1933.

Zoology. Part I. Catechism series. Robert A. Staig, M.A., Ph.D., F.R.S.E., Lecturer in Zoology, University of Glasgow. Third ed., 88 pages. Price 1/6 net. E. & S. Livingstone, Edinburgh, 1933.

International Clinics. Vol. 3, 43rd series. 316 pages, illustrated. Price $3.00. J. B. Lippincott, Philadelphia, Montreal, and London, September, 1933.

Blood Pictures. Cecil Price-Jones, M.B. Third ed., 73 pages, illustrated. Price $2.00. John Wright & Sons, Bristol; Macmillan Co., Toronto, 1933.

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